# FERMI NATIONAL ACCELERATOR LABORATORY
# CULTURAL RESOURCE MANAGEMENT PLAN 2014

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Acronyms:

| | |
|---|---|
| ACHP | Advisory Council on Historic Preservation |
| AIRFA | American Indian Religious Freedom Act |
| ASL | Above Sea Level |
| ASSR | IHPA Archaeological Survey Short Report |
| ARPA | Archaeological Resources Protection Act |
| CFR | Code of Federal Regulations |
| CRM | Cultural Resources Management |
| CRMP | Cultural Resources Management Plan |
| DOE | U.S. Department of Energy |
| DOI | U.S. Department of the Interior |
| DUSAF | Daniel, Urbahn, Seelye and Fuller |
| ESHS | Environment, Safety and Health Section |
| FB | Farm Book |
| FESS | Facilities Engineering Services Section |
| FRA | Fermi Research Alliance |
| GIS | Geographic Information System |
| GLO | General Land Office |
| GPS | Global Positioning System |
| HABS | Historic American Buildings Survey |
| HAER | Historic American Engineering Record |
| HSRPA | Human Skeletal Remains Protection Act |
| IAC | Illinois Administrative Code or Ill. Adm. Code |
| IAS | Illinois Archaeological Survey |
| IHPA | Illinois Historic Preservation Agency |

| | |
|---|---|
| ISM | Illinois State Museum |
| LBNE | Long-Baseline Neutrino Experiment |
| MARS | Midwest Archaeological Research Services, Inc. |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NRHP | National Register of Historic Places |
| PA | Programmatic Agreement |
| SHPO | State Historic Preservation Officer |
| SSF | State Site File |
| USGS | United States Geological Survey |

# 1 EXECUTIVE SUMMARY

Section 2 of the National Historic Preservation Act (NHPA) states that it is the policy of the Federal Government to provide leadership in the preservation of cultural resources on lands it administers, and to manage these in a spirit of stewardship for future generations. The U.S. Department of Energy (DOE) recognizes the value of the cultural resources that may exist on the properties under its management. Cultural resources, man-made and natural physical features associated with human activity, are the representations of our past. They are finite, unique, fragile, and nonrenewable. Tangible remnants of our past tie us to the continuum that is biological and cultural history, giving us a sense of who we are, how we got here, and where we are going.

Fermi National Accelerator Laboratory (Fermilab), comprising 6,800 acres, is located in Winfield Township, DuPage County, Illinois and Batavia Township, Kane County, Illinois (Figures 1 and 2). Fermi Research Alliance (FRA) manages Fermilab for the U.S. Department of Energy Office of Science. FRA is a partnership of the University of Chicago and Universities Research Association, Inc., a consortium of 86 research universities. This updated Cultural Resources Management Plan (CRMP) has been prepared to fulfill the responsibilities of the DOE under the NHPA and describes the management of cultural resources pursuant to the NHPA and State of Illinois legislation.

Cultural resources include both archaeological sites (*e.g.,* prehistoric Native American campsites and former historic Euro-American farmsteads/residences) and architectural sites (historic Euro-American farmsteads/residences and extant buildings, structures, and features associated with the operation of Fermilab and/or important scientific endeavors). Cultural resources also include traditional resources, such as sacred areas or traditional use areas (*e.g.,* cemeteries or burial grounds) that are important to a community's practices and beliefs and are necessary to maintain the cultural identity of the community. Significant cultural resources are those resources that have been evaluated and found to be significant under one or more of the following criteria: a) for their relation to important events or broad patterns of events; b) their association with important people or a local, regional, or national level; c) for their design or construction, or as a work of a master; and d) for their information potential (Little *et al* 2000).

As of 2014, Phase I archaeological survey has been completed for the entire Fermilab facility, and 108 archaeological (historic and prehistoric) and architectural sites (historic) have been recorded with the State of Illinois. Two sites (11-Du-222 and 11-Du-225) contain both prehistoric and historic components. Of the 108 sites, 75 sites have been sufficiently investigated to determine eligibility for inclusion on the National Register of Historic Places (NRHP): five are eligible and 70 are <u>not</u> eligible (Table 1). Thirty-three recorded sites have not been formally evaluated to determine their NRHP eligibility. All

of these sites have been located on a Fermilab map that may be used for identification purposes by individuals responsible for regulatory compliance review.

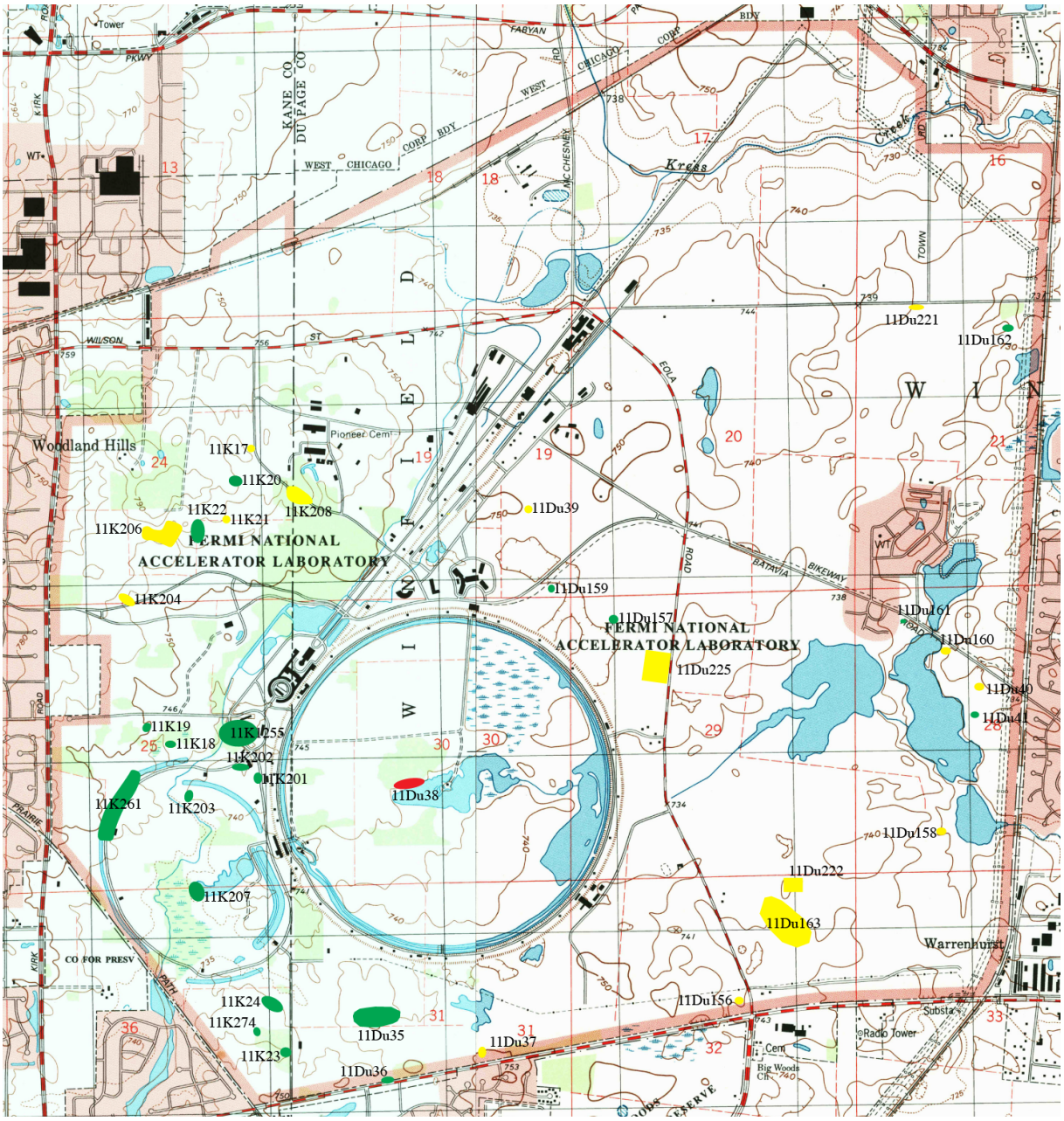


Figure 1. Portions of the 7.5 minute U.S.G.S. Aurora North and Naperville quadrangles showing the Fermilab boundaries and sites with prehistoric components only (reduced to 64% of the original). Key: sites coded GREEN=not eligible the NRHP. YELLOW=not evaluated for NRHP, and RED=eligible for the NRHP or protected by the Human Skeletal Remains Protection Act (HSRPA).

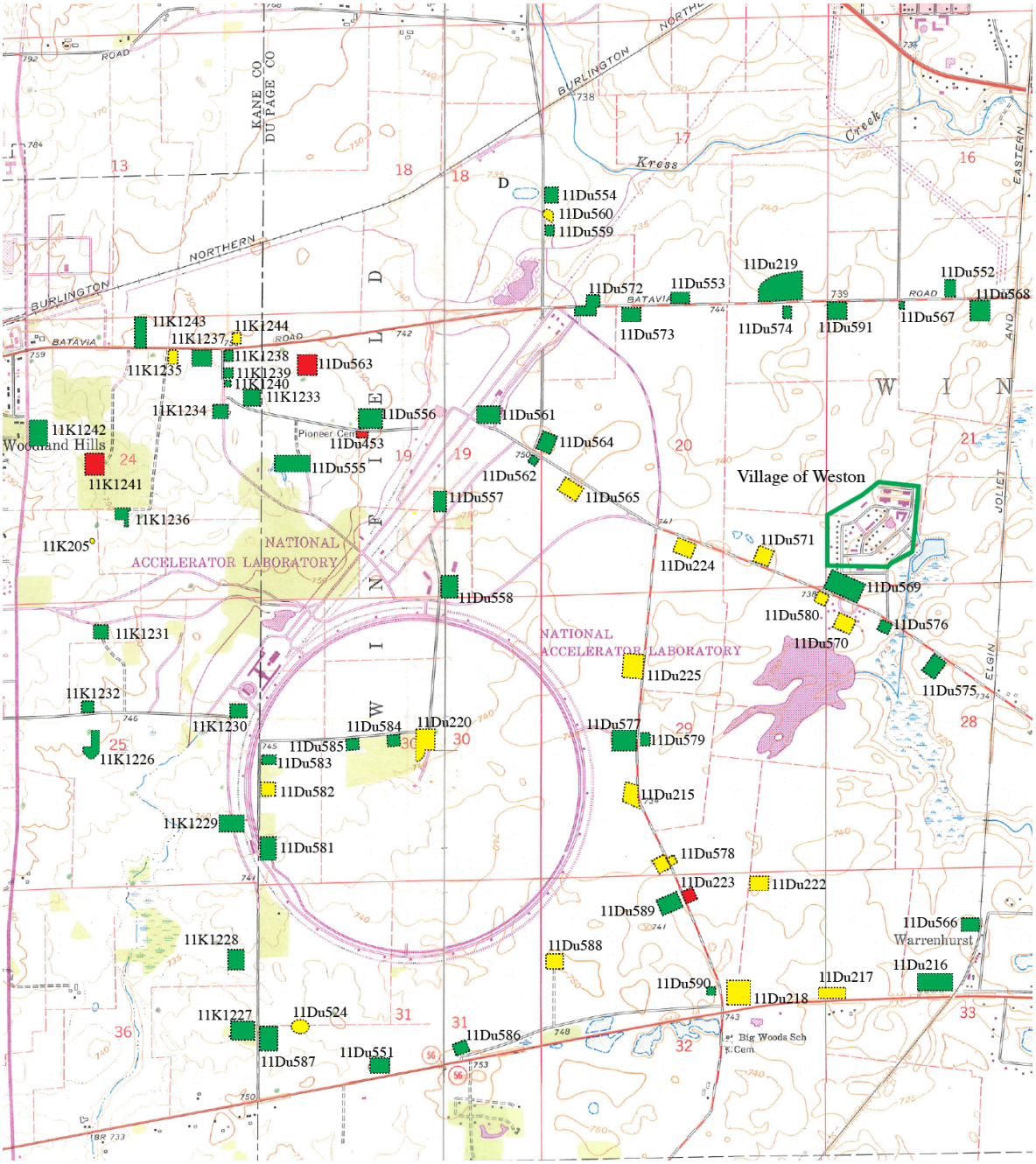


Figure 2. Portions of the 7.5 minute U.S.G.S. Aurora North and Naperville quadrangles showing the sites with historic or multi-components, labeled with site numbers (reduced to 64% of the original). Key noted in Figure 1 caption.

Table 1. Summary of NRHP status for Fermilab sites.

| Site type | Not eligible | Not evaluated | Eligible or Protected | TOTAL* |
|---|---|---|---|---|
| Prehistoric component | 20 | 14 | 1 | **35** |
| Prehistoric & historic* | 0 | 2 | 0 | **2** |
| Historic component | 50 | 17 | 4 | **71** |
| TOTAL | **70** | **33** | **5** | **108** |

* Site 11-Du-222: prehistoric component not eligible but historic component not evaluated; therefore, the site has not been evaluated. Site 11-Du-225: not evaluated for either component.

This CRMP describes the management of cultural resources at Fermilab pursuant to the NHPA and the regulations established by the Illinois Historic Preservation Agency (IHPA), based on theses standards. The objectives of the CRMP are to:

1) Establish programmatic goals to ensure the protection and preservation of cultural resources at Fermilab and to identify tasks necessary for implementing these goals, discussed in Section 2.

2) Provide an overview of past cultural resources management (CRM) accomplishments, discussed in Section 3.

3) Establish procedures for managing cultural resources at Fermilab and define the administrative structure and staff for implementing these procedures to meet regulatory requirements and responsibilities, described in Section 4.

4) Identify appropriate methodologies to be used at Fermilab such as: record maintenance and report preparation, inventory, excavation, structure and facility management, laboratory treatment, curation, preservation, and outreach; to ensure compliance with cultural resource statutes and regulations, described in Section 5.

Supporting information is contained in the appendices. Appendix A contains a current description of the facility. Appendix B includes a brief overview of the pre Euro-American physical setting. Appendix C contains a cultural context for the historic properties. Appendix D describes previous archaeological investigations conducted at Fermilab and presents a summary of known cultural resources. Forms required by cultural resources management procedures are found in Appendix E.

## 2 CULTURAL RESOURCES MANAGEMENT GOALS

The DOE recognizes its responsibilities for managing cultural resources on DOE-owned lands and other lands that are affected by the DOE programs (DOE 2004). In light of this public trust, the DOE will adopt a proactive approach to meet the goals addressed in this CRMP to show its commitment to CRM and its recognition of the cultural and scientific value of Fermilab's prehistoric and historic resources.

Management goals for known cultural resources located at Fermilab reflect current issues, interests, problems, and deficiencies identified through internal assessment. The goals include protecting and preserving significant resources, establishing outreach programs, and continuing the integrity of the CRMP. Implementation of the goals and associated tasks of this CRMP requires the DOE to maintain a sufficient level of funding.

### 2.1 PROGRAM GOALS AND ASSOCIATED IMPLEMENTATION TASKS

#### 2.1.1 Ensure the Protection and Preservation of Historic Archaeological Properties

a) Fermilab will complete the National Register of Historic Places (NRHP) evaluation and nomination (if applicable) of cultural resource sites (archaeological and architectural) at Fermilab. Of the 108 recorded cultural resource sites at Fermilab, the eligibility status of 33 sites (both historic and prehistoric) remains undetermined.

b) Fermilab will incorporate improved site locations onto Fermilab's Geographic Information System (GIS) to insure adequate protection.

#### 2.1.2 Ensure the Protection and Preservation of Historic Structures

a) Midwest Archaeological Research Service, Inc. (MARS) has prepared a historic context essay concerning Fermilab in order to expedite the evaluation of any buildings and structures associated with important scientific research or of significant architectural importance, even if the building is less than 50 years old (Appendix A).

b) Fermilab will maintain an inventory and evaluation of all Fermilab buildings and structures based on the historic context defined by the DOE. Fermilab maintains a map showing all current Fermilab buildings and structures, and maintains a computerized file documenting among other things the age, size, condition, and use of each (Appendix A). An example of a "Facilities Information Management System Complete Owned Building Report" is presented in Appendix E.

c) The protection of known and potentially significant resources is part of normal security procedures and ensures that these resources are not endangered by natural processes, vandalism, *etc*.

d) Where specific actions make protection impossible, plans for establishing alternative mitigation measures will be prepared and discussed in consultation with the IHPA.

2.1.3 Establish a Public Outreach Program

Under normal circumstances Fermilab is open to the public. Its public outreach programs include (but are not limited to) self-guided tours, guided tours for groups, teacher workshops, internships, an "Ask a Scientist" weekly event, lectures, exhibits at the Lederman Science Center, its History and Archives Project, and information available on its Internet web site <www.fnal.gov>. Media available to the public include a video history of the tall grass prairie developed at Fermilab (Visual Media Services 2003), a video documentary showing the diversity of the people, research, and work conducted at Fermilab (Fermilab 2013), and a written history of the accelerator laboratory illustrating the growth and development of high-energy particle-physics research (Hoddeson 2008).

2.1.4 Ensure Continued Integrity of Cultural Resource Management Program

a) The DOE does not plan to conclude a programmatic agreement with the Advisory Council on Historic Preservation (ACHP) and the IHPA at this time. The DOE does plan to work closely with the IHPA is protecting the cultural resources at Fermilab.

b) Under most circumstances the DOE will consult with Native American groups that may have an interest in properties on its facilities. At this time there are no federally recognized tribes based in Illinois nor have any Native American groups expressed an interest in sites or resources at the Fermilab facility; therefore, the need to consult with Native American groups does not currently apply to Fermilab.

2.2 IMPLEMENTED TASKS

2.2.1 Review and Relocate Record Management System

A complete review of the site and survey record management system used by the Fermilab staff archaeologists prior to 2014, and by MARS personnel between 1996 and 2014, has been completed. Duplicate records were eliminated and site correction forms have been submitted to the state site file (SSF). Copies of all cultural resources reports are on file at Fermilab with the Environment, Safety, Health and Quality Section (ESHQS) and have been provided to the IHPA. All survey and testing project notes are stored with artifacts recovered from Fermilab at the Illinois State Museum (ISM). Duplicate copies of these records are also on file at MARS.

2.2.2 Relocate Artifacts to an Appropriate Repository

All artifacts previously stored in Wilson Hall have been inventoried, repackaged with appropriate labels, and delivered for storage at the ISM. Subsequently, all new

collections have been sent directly to the ISM following project completion. The artifacts may be accessed and reviewed at the museum by any interested party.

### 2.2.3 On-Site Archaeological Facilities

There are no on-site archaeological facilities at Fermilab. Since 1987 MARS has conducted all of the cultural resource projects at Fermilab using the company's equipment and laboratory space.

## 2.3 FUNDING TO SUPPORT GOALS

Evaluation or mitigation activities that may be required due to potential impacts from a specific project will be funded by the project causing the impact as needed.

# 3 CULTURAL RESOURCES MANAGEMENT ACCOMPLISHMENTS

Phase I archaeological surveys have been completed for the entire Fermilab facility. Ann Early initiated survey and testing projects in 1970 and 1971. Her work was reviewed and augmented by Robert J. Jeske, a graduate student at Northwestern University and a co-founder of MARS (active from 1986 to 1988). Dr. Jeske is now a Professor of Anthropology at the University of Wisconsin-Milwaukee. Since 1988, MARS has conducted the survey and testing projects, under the direction of Dr. Rochelle Lurie and Dr. M. Catherine Bird. Those areas not amenable to survey are limited to Fermilab facility buildings, parking lots, ponds, and roadways. In January of 2002, MARS delivered copies of all archaeological reports pertaining to Fermilab to the IHPA for review. Subsequent reports have been sent to the IHPA soon after MARS completed the fieldwork for each project.

## 3.1 CULTURAL RESOURCE RECORDS AND REPORTS

The DOE is responsible for long-term management and preservation of pre-existing, and new collections subject to 36 Code of Federal Regulations (CFR) Part 79.5. The originals of the written reports pertaining to archaeological work on Fermilab are stored in the Fermilab ESHQS.

## 3.2 INVENTORY

### 3.2.1 Archival Searches

Beginning in 1968 historical studies, undertaken by summer intern Ms. Karyl Louwenaar and others, garnered general information about the settlement of Kane and DuPage counties from county histories and oral histories, and provided an inventory of standing structures on the new Fermilab property noting their possible historical and architectural importance. The studies were undertaken to help establish ties with local landowners and communities, and to provide a planning tool for the demolition, preservation, or reuse of the existing buildings and structures. The results of these studies

can be found in *Plan For Existing Buildings On The NAL Site Near Batavia, Illinois* prepared by joint-venture architects Daniel, Urbahn, Seelye and Fuller (DUSAF), and in manuscripts on file in the Fermilab library. Since these early historical studies, many other studies have been undertaken. In 1998, students from Northern Illinois University augmented the collections with documents, photographs, and interviews conducted under the supervision of historian E. Taylor Atkins, then a newly hired assistant professor at Northern. The *Fermilab History and Archives Project* presents these data online and in a published format.

MARS conducted extensive archival research focused on the earliest Euro-American settlers on Fermilab's 6,800 acres and the "Big Woods" community as part of its Historic Site Survey in 1990 (Shaffer, Goldsmith, and Lurie 1993). MARS used the General Land Office (GLO) notes and historical plats of Batavia Township, Kane County and Winfield Township, DuPage County to construct composite maps showing the locations of historic structures through time. These maps were used to direct the archaeological survey for historic properties.

MARS completed visual field reconnaissance and architectural assessment of all historic properties (predating Fermilab) and conducted Phase I archaeological survey of 36 historic properties during the spring and summer of 2013 (with a follow-up in May of 2014) to assist Fermilab in the efficient management of the historic properties under their care (Bird 2013d, 2014). Advances in the availability of digital records have greatly enhanced the most recent documentary and field research.

3.2.2 Ethnographic Fieldwork

No Native American ethnographic studies have been necessary at Fermilab, but extensive interviews have been conducted with former farm families. Some of this information is available on the Fermilab History and Archives Project web page <http://www.fnal.gov/projects/history/index.html>.

3.2.3 Architectural Surveys

The architectural surveys conducted in 1968 by DUSAF and in 2013 by MARS evaluated existing buildings and structures (see Section 3.2.1). As a result of the 1968 research many historic properties were saved for adaptive reuse and others were demolished. MARS determined that three historic properties are eligible for inclusion on the NRHP—the *circa* 1939 residence at Meywell Acres (Farm Book 29/11-K-1241) under Criteria B and C, the *circa* 1865 residence on the Samuel and Lucy Bartholomew Farmstead (Farm Book 58/11-Du-223) under Criteria B and D, and the middle to late nineteenth century Watson-Hawks barn on the Sanford and Jennie Watson Farmstead (Farm Book 65/11-Du-563) under Criterion C.

The Fermilab Task Force on Design, convened in 2001, planned to review Fermilab's buildings and structures, and to identify any building of significant design and those structures in which important physics related work and/or discoveries occurred (*Fermilab Today 2004,* Ed Crumpley [retired 2010], 2001 personal communication). Founding director Robert Rathbun Wilson (resigned 1978), in collaboration with graphic artist Angela Gonzales (retired 1998), utilized colors, sculpture, landscape, and architecture to create an aesthetically pleasing campus that connected science, nature, and the arts (FermiNews 1998). Architect Ed Crumpley, former co-chair of the task force, had worked alongside Wilson "helping to translate his [Wilson's] sculptural inspirations into building concepts" (Kunz 2010). Fermilab appointed its first campus architect in 2013—Gary Van Zandbergen (Ortgiesen 2013). His responsibility is to develop a deliberate strategy for continuity of architecture—preserving Fermilab's architectural heritage, communicating the campus' architectural vision, and developing a master plan for the campus. The Master Planning Task Force produced a Mission Plan and Vision Statement in 2013; however, a review to identify significant buildings and structures associated with the scientific work on campus will be developed on a case-by-case basis.

During a site visit on 7 May 2014, David Halpin of the IHPA informally suggested that the Fermilab facility appears to be eligible for inclusion on the NRHP under Consideration G, as the facility is of exceptional importance although it has achieved significance within the last fifty years. Identifying the buildings and structures is an important next step in responsible management.

### 3.2.4 Archaeological Surveys

A number of archaeological surveys to locate and record cultural resources at Fermilab were completed from 1978 through 2013. Details of these projects are discussed in Appendix D. In addition, maps of the facility, showing the location and type of each archaeological survey conducted, are found in the individual reports documenting the research.

## 3.3 EXCAVATION

One hundred eight sites have been mapped within Fermilab. Of these, 75 sites have been sufficiently investigated to determine eligibility for inclusion on the NRHP (see Table 1 and Table 2). Of these 75 sites, only one prehistoric site, the Gazebo site (11-Du-38), is potentially eligible for the NRHP. Pioneer Cemetery (11-Du-453) is protected under the Human Skeletal Remains Protection Act (HSRPA). Two farmstead residences (11-Du-223 and 11-K-1241) and one barn (11-Du-563) have also been determined eligible for inclusion on the NRHP. Of the 70 sites ineligible for the NRHP, 20 are prehistoric Native American sites and 50 are historic Euro-American sites. The remaining 33 recorded sites have not been formally evaluated to determine their

eligibility for inclusion under the NRHP. All sites have been located on a topographic quadrangle, which is used for identification purposes by individuals responsible for regulatory compliance review.

## 3.4 STRUCTURE AND FACILITY MANAGEMENT

### 3.4.1 Structure and Facility Documentation

An inventory of the modern (post-1967) buildings and structures on Fermilab has been planned for over ten years but not completed. Although these buildings are not more than 50 years old, some may have architectural and/or scientific significance.

### 3.4.2 Structure and Facility Maintenance and Mitigation

Planned activities and updating continue to be performed on all buildings and structures at Fermilab. No mitigation strategies have been identified since the significance of these buildings and structures has not been determined.

Table 2. Summary of sites recorded on Fermilab 1970-2013.

| Site name | Site number | Status | Criteria |
|---|---|---|---|
| 11-Du-35 | | Not eligible | |
| 11-Du-36 | Fox | Not eligible | |
| 11-Du-37 | Sauk | Test | |
| 11-Du-38 | Gazebo | **Eligible** | Criterion d |
| 11-Du-39 | Wilson | Test | |
| 11-Du-40 | Mensing | Test | |
| 11-Du-41 | Ferry Creek | Not eligible | |
| 11-Du-156 | Eola | Test | |
| 11-Du-157 | Trust | Not eligible | |
| 11-Du-158 | Brummel | Test | |
| 11-Du-159 | Phillips | Not eligible | |
| 11-Du-160 | Mack | Test | |
| 11-Du-161 | Anderson | Not eligible | |
| 11-Du-162 | Garden North/Gregory/NAL-25 | Not eligible | |
| 11-Du-163 | NAL-27 | Test | |
| 11-Du-208 | North Meadow | Test | |
| 11-Du-215 | Lucius and Mary Bartholomew Farmstead | Test | |
| 11-Du-216 | Ira and Eunice Woodman Farmstead | Not eligible | |
| 11-Du-217 | Simpson Israel and Phoebe Brown Farmstead | Test | |
| 11-Du-218 | Jeremiah and Jane Cromer Farmstead | Test; *Assess water tower* | |
| 11-Du-219 | Alvin and Eunice Ball Farmstead (East) | Not eligible | |
| 11-Du-220 | Robert and Jane Denham Farmstead | Test | |
| 11-Du-221 | Gregory | Test | |
| 11-Du-222 | Isaac and Mahitable Reynolds Farmstead | Test; prehistoric NE | |
| 11-Du-223 | Samuel and Lucy Bartholomew Farmstead | Test archaeological site; Criterion b and d (R) | |
| 11-Du-224 | Russel and Julia Manville Farmstead | Test | |
| 11-Du-225 | Daniel and Hannah Warne Farmstead | Test | |
| 11-Du-453 | Pioneer Cemetery | **HSRPA** | Protected |
| 11-Du-524 | John and Elizabeth Brummel Farmstead | Test | |
| 11-Du-551 | John and Margaret Theis Farmstead | Not eligible | |

Table 2. Summary of sites recorded on Fermilab 1970-2013, continued.

| Site name | Site number | Status | Criteria |
|---|---|---|---|
| 11-Du-552 | William and Eliza Ainsworth Farmstead | Not eligible | |
| 11-Du-553 | George and Louisa Pelham Farmstead | Not eligible | |
| 11-Du-554 | Noah and Elizabeth Cooper Farmstead | Not eligible | |
| 11-Du-555 | George Clinton and Harriet Howe Farmstead | Not eligible | |
| 11-Du-556 | Germain-Vandervolgan Farmstead | Not eligible | |
| 11-Du-557 | Mary Taylor Farmstead | Not eligible | |
| 11-Du-558 | John and Theresa Feldott Farmstead | Not eligible | |
| 11-Du-559 | John and Elizabeth Kline Farmstead | Not eligible | |
| 11-Du-560 | Amos and Susan Rive Farmstead | Test | |
| 11-Du-561 | John Winslow Farmstead | Not eligible | |
| 11-Du-562 | Round Grove School House | Not eligible | |
| 11-Du-563 | Sanford and Jennie Watson Farmstead | **Eligible** | Criterion c (B) |
| 11-Du-564 | Elijah and Lydia Smith Farmstead | Not eligible | |
| 11-Du-565 | Milo and Julia Ann Kemp Farmstead | Test | |
| 11-Du-566 | Vincent and Stephanie Ornatowski | Not eligible | |
| 11-Du-567 | Erdmann Tenant Farm | Not eligible | |
| 11-Du-568 | Elmer H. Williams Farmstead | Not eligible | |
| 11-Du-569 | Samuel H. Warne Farmstead | Not eligible | |
| 11-Du-570 | William H. and Ellen Carpenter Farmstead | Test | |
| 11-Du-571 | James Wilson Homestead | Test | |
| 11-Du-572 | William and Minnie Giese Farmstead | Not eligible | |
| 11-Du-573 | Henry and Margaret Giese Farmstead | Not eligible | |
| 11-Du-574 | Wilton and Elsie Lehman Farmstead | Not eligible | |
| 11-Du-575 | George McAuley Farmstead | Not eligible | |
| 11-Du-576 | W. H. Carpenter Bachelor Cabin | Not eligible | |
| 11-Du-577 | Amos C. and Mary A. Graves | Not eligible | |
| 11-Du-578 | Taylor S. and Harriet Warne Farmstead | Test | |
| 11-Du-579 | Phineas and Anna Graves Farmstead | Not eligible | |
| 11-Du-580 | Lucius Hollister Homestead | Test | |
| 11-Du-581 | Frederick and Albertine Pahnke Farmstead | Not eligible | |
| 11-Du-582 | Lucius Hollister Homestead | Test | |
| 11-Du-583 | Marche Kennels | Not eligible | |
| 11-Du-584 | George Holter Retirement House | Not eligible | |
| 11-Du-585 | John L. and Elizabeth Feldott Farmstead | Not eligible | |
| 11-Du-586 | James and Anna Brown Farmstead | Not eligible | |
| 11-Du-587 | Peter and Margaret Baumann Farmstead | Not eligible | |
| 11-Du-588 | David and Sarah McKee Farmstead | Test | |
| 11-Du-589 | James W. and Frances McKee Farmstead | Not eligible | |
| 11-Du-590 | T. B. | Not eligible | |
| 11-Du-591 | Jacob and Salome Wurtz Farmstead | Not eligible | |
| 11-K-17 | Fitzgerald | Test | |
| 11-K-18 | Tadpole | Not eligible | |
| 11-K-19 | Frog | Not eligible | |
| 11-K-20 | Bartelt | Not eligible | |
| 11-K-21 | Potawatomi | Test | |
| 11-K-22 | Malone | Not eligible | |
| 11-K-23 | Kautz | Not eligible | |
| 11-K-24 | Pioneer | Not eligible | |
| 11-K-201 | APCH-1 | Not eligible | |
| 11-K-202 | APCH-2 | Not eligible | |
| 11-K-203 | APCH-3 | Not eligible | |

Table 2. Summary of sites recorded on Fermilab 1970-2013, concluded.

| Site name | Site number | Status | Criteria |
|---|---|---|---|
| 11-K-204 | PSPR-B | Test | |
| 11-K-205 | PSPR-C1 | Test | |
| 11-K-206 | Shabbona | Test | |
| 11-K-207 | Lorenz | Not eligible | |
| 11-K-208 | Avenue B/NAL-26 | Test | |
| 11-K-261 | MARS 140-CFS15 | Not eligible | |
| 11-K-274 | Pioneer West | Not eligible | |
| 11-K-1226 | Herman and Wilhelmina Schwahn Farmstead | Not eligible | |
| 11-K-1227 | Peter and Mary Rausch Farmstead | Not eligible | |
| 11-K-1228 | Jesse and Eliza Graves Farmstead | Not eligible | |
| 11-K-1229 | John and Bridget Carr Farmstead | Not eligible | |
| 11-K-1230 | Fred and Eliza Fenske Farmstead | Not eligible | |
| 11-K-1231 | William and Etta Trantow Farmstead | Not eligible | |
| 11-K-1232 | Charles and Emilie Giese Farmstead | Not eligible | |
| 11-K-1233 | Spear-Griffith Farmstead | Not eligible | |
| 11-K-1234 | E. Griffith Tenant Farmstead | Not eligible | |
| 11-K-1235 | Buelter School | Test | |
| 11-K-1236 | Hill Farmstead-Malone Farm | Not eligible | |
| 11-K-1237 | Elijah S. and Hannah E. Town Farmstead | Not eligible | |
| 11-K-1238 | Cliff and Helen Anderson Residence | Not eligible | |
| 11-K-1239 | Everett and Elaine Kraft Residence | Not eligible | |
| 11-K-1240 | George Tincknell Residence | Not eligible | |
| 11-K-1241 | Meywell Acres | Eligible | Criterion b and c (R) |
| 11-K-1242 | John and Mary Wygnat Farmstead | Not eligible | |
| 11-K-1243 | Spear Farmstead | Not eligible | |
| 11-K-1244 | Andrew and Lucinda Spear Cabin | Test | |
| 11-K-1255 | Runde | Not eligible | |

R=residence, B=barn, NE=not eligible

## 3.5 LABORATORY TREATMENT

### 3.5.1 Processing

Processing of cultural material is completed off-site at contractor locations. MARS processed all materials recovered during Fermilab surveys and excavations at its laboratory in Harvard, Illinois and more recently in Marengo, Illinois. The following steps are currently used when processing artifacts collected on Fermilab. These procedures may differ from those in effect when the bulk of Fermilab surveys and site testing were conducted (*i.e.,* 1970-1990). The differences are explained in Appendix D.

When cultural resources are removed from paper or plastic field bags for processing, the laboratory technician always keeps that part of the original bag that contains artifact provenience with the materials while washing and drying. The cleaned and dried materials are separated by material type (lithics, ceramics, floral, faunal, *etc*.) and then placed in zippered plastic bags with a properly labeled identification card. Each separate type of cultural material is then given to specific archaeologists (specialists) for analysis.

### 3.5.2 Analysis

Early, Jeske, and various members of the MARS staff conducted analysis of artifacts. The level of analysis depended on the scope of the project and the abilities of the analyst. MARS currently conducts macroscopic lithic analysis and microwear analysis (when appropriate) of stone tools, prehistoric ceramic analysis, floral and faunal analyses, and historic artifact (ceramic, glass, metal etc.) analysis in its Marengo office. If organic samples are collected from sites, radiocarbon samples are sent to the Illinois State Geological Survey in Champaign, Illinois or Beta Analytic Laboratory in Miami, Florida, for radiocarbon dating.

## 3.6 CURATION

Copies of all cultural resources reports are on file at Fermilab in the ESHS and copies have been provided to the IHPA. All survey and testing project reports and notes are stored with artifacts recovered from Fermilab at the ISM with their associated artifacts. Duplicate copies of these records are also on file at MARS. All artifacts previously stored in Wilson Hall have been inventoried, repackaged, and sent to the ISM (Appendix D). The artifacts may be accessed and reviewed at the museum by any interested party.

## 3.7 PRESERVATION

### 3.7.1 Protection from Natural Forces

Efforts to protect archaeological sites from the effects of natural forces rely primarily on stabilization. Prairie grasses planted on former agricultural fields reduce erosion and deflation of plowed-field sites. Soils from all shovel probes and hand-dug excavations are backfilled to prohibit erosion. Many of the extant sites on Fermilab are protected from erosion by vegetation.

### 3.7.2 Protection from Human Forces

Protection of historic properties from human activities includes not only the responsibility for protecting such sites during authorized activities, but also from any illegal or unauthorized acts. Efforts to protect cultural resource sites at Fermilab include (1) planting vegetation over sites in plowed fields so that surface collecting is no longer possible, (2) limiting the distribution of the map identifying the location of archaeological sites, and (3) taking into consideration the NRHP status of archaeological and architectural properties prior to disturbance, including demolition.

## 3.8 RESEARCH

Prehistoric, historic, or ethnographic research projects using data from cultural resources at Fermilab have focused on prehistoric settlement patterns and the change in these patterns through time (Early 1970, 1971, 1973; Jeske 1986a, Jeske and Lurie 1988). Lurie's 1988 work at the Gazebo site focuses on the analysis of lithic artifacts as a means

of establishing the type and period of occupation (Lurie 1990). The first MARS historic site report addresses the question of early settlement in the "Big Woods" in Kane and DuPage Counties through work at selected sites (Shaffer, Goldsmith, and Lurie 1993). The second MARS historic report, building upon previous research, examines all of the historic properties and evaluates them for NRHP, identifies thirteen pre-emption land sale sites/documentation, and includes ten site correction forms, two site revisit forms, and sixty-one new site forms. The research presents a more robust discussion of the social and agricultural history of settlement through the nineteenth and twentieth century within the rural landscape immediately east of Batavia.

### 3.9 OUTREACH

See Section 2.1.3.

### 3.10 INTERAGENCY INFORMATION EXCHANGE

Fermilab completes an annual questionnaire prepared by the U.S. Department of the Interior (DOI) concerning federal archaeological activities (Questionnaire on Federal Archaeology Program Activities, GSA Control Number: 0236-DOI-AN). The DOI Secretary is required to report annually to Congress financial and other quantitative information, project highlights, discussions of key planning and policy issues, a description of known and projected archaeological sites and associated artifacts and records, and a summary of program activities. The agency-by-agency and government-wide database is used by departments and agencies in evaluating their archaeological activities.

## 4 CULTURAL RESOURCES MANAGEMENT ADMINISTRATION AND PROCEDURES

### 4.1 CRM ADMINISTRATION

The following roles and responsibilities are necessary for administering CRM activities at Fermilab.

#### 4.1.1 DOE Staffing

The DOE Fermi Site Office has designated a program manager for CRM activities.

#### 4.1.2 Fermilab Staffing

Fermilab will provide a staff person within the ESHQS to coordinate services for Fermilab cultural resources activities.

#### 4.1.3 Quality Assurance

Independent quality assurance oversight is provided by the ESHQS.

4.1.4 CRM Facilities

Fermilab does not maintain facilities to store or process cultural resource artifacts. All processing is completed off-site at the contractor's location.

4.1.5 Consultation with the Illinois Historic Preservation Agency

The DOE, as a federal agency, is responsible for compliance with the review process set forth in Section 106, working closely with IHPA and the ACHP. The DOE and Fermilab staff will ensure that the IHPA is appropriately notified of activities at Fermilab and that all projects are reviewed in a timely manner.

4.1.6 Professional Qualifications of Contracted Archaeological Consultants

All supervisory personnel completing paleontological activities or archaeological field investigations must be certified by the IHPA and meet the requirements established in 17 Illinois Administrative Code (IL Adm Code) 4190.401-501. In addition to the qualifications necessary for individuals employed by a contracting firm, that firm must demonstrate the ability to perform work in a timely and cost-efficient manner.

4.1.7 Outreach

See Section 2.1.3.

4.1.8 Interagency Information Exchange

The ESHQS at Fermilab will prepare for the DOE the response to the annual questionnaire requested by the DOI concerning federal archaeological activities, and the DOE will submit it to the DOI.

4.2 CRM COMPLIANCE REQUIREMENTS AND PROCEDURES

Cultural resource management procedures at Fermilab must ensure that site activities meet the compliance requirements that apply to cultural resources, including those under the following authorities: the National Historic Preservation Act, Executive Order 11593; 36 CFR Part 800, Protection of Historic and Cultural Properties; the Archaeological Resources Protection Act (ARPA), the American Indian Religious Freedom Act (AIRFA); the Native American Graves Protection and Repatriation Act (NAGPRA), and 36 CFR Part 79, Curation of Federally-Owned and Administered Archaeological Collections.

4.2.1 National Historic Preservation Act, Executive Order 11593, and 36 CFR Part 800

Cultural resource compliance activities at Fermilab pertaining to Sections 106 and 110(f) and the Section 106 implementing regulations in 36 CFR Part 800 are completed as part of the Fermilab National Environmental Policy Act (NEPA) review process.

4.2.1.1 Review for Potential Impacts to Cultural Resources during Project Initiation

In accordance with DOE regulations, orders, and associated guidance, Fermilab has established a process that requires all projects and activities to undergo review for potential environmental impact prior to their initiation. This review also assesses the level of NEPA review required for a particular project or activity. A recommendation on the appropriate level of review is provided to DOE for final determination by that agency. The organization responsible for coordinating Fermilab's NEPA review process is within the ESHQS.

Potential impacts to cultural resources from any proposed action are identified through the NEPA evaluation process by completing an Environmental Evaluation Notification Form during project planning. For archaeological and architectural properties, this evaluation is made by consulting the color-coded quadrangles that identify all identified pre-1967 cultural resources (see Figures 1 and 2). Sites coded GREEN are not eligible for inclusion on the NRHP. Sites coded YELLOW have not been evaluated for NRHP eligibility. Sites coded RED are eligible for the NRHP or are protected by the HSRPA.

4.2.1.2 Specific Guidelines for Use during Potential Impacts Review

Archaeological and architectural surveys have identified 108 historic properties (see Figures 1 and 2). Fermilab first reviews the color-coded quadrangles to determine whether a proposed undertaking contains historical properties. Previously Fermilab also had to review the map depicting Collector Interview sites (Lurie 1990: Figure 5). However, the collector data have been incorporated into the new figures. Buildings and structures associated with research facility, dated 1967 and later, have not been evaluated for the NRHP and must be taken into consideration during planning.

Proposed undertakings should be reviewed in the following manner:

1) For those undertakings that do not involve buildings and structures associated with the research facility (*i.e.*, dated 1967 or more recent) <u>but</u> may impact sites that are coded GREEN, no further consideration of historic properties is warranted. The undertaking may proceed as planned.

2) For those undertakings that do not involve buildings and structures associated with the research facility (*i.e.*, dated 1967 or more recent) <u>but</u> may impact sites that are coded YELLOW, further consideration of these historic properties is warranted. The site(s) must be tested and evaluated for NRHP eligibility prior to conducting ground-disturbing activities on the site. Site evaluation follows the steps outlined in Sections 5.2 and 5.3. A report detailing the results of site evaluation is submitted to the IHPA. If the IHPA declares the site ineligible for the NRHP, the project is cleared for construction. If

the site is eligible, managers should attempt to avoid adverse impact to the site. If avoidance is not feasible, Fermilab will consult with the IHPA regarding appropriate mitigation or protection plans. Mowing lawns and fields, painting buildings and fences, and harvesting crops are not considered ground-disturbing activities.

3) Adverse impact to sites coded RED should be avoided. If avoidance is not feasible, Fermilab will consult with the IHPA regarding appropriate mitigation or protection plans. Buildings and structures coded RED cannot be modified, dismantled, or demolished prior to consultation and mitigation. Archaeological sites coded RED cannot be disturbed (*e.g.,* plowed, graded, planted, or buried) prior to consultation and mitigation. Only routine maintenance of the grounds (limited to mowing, tree trimming, and fence repair) may be conducted at Pioneer Cemetery without a HSRPA permit from the IHPA. Any cemetery restoration work (cleaning, repairing, *etc*.) in an unregistered cemetery requires a permit from the IHPA as well.

4) Assessment of the buildings and structures associated with the Fermilab facility (dated 1967 and later) remains in the planning stages. Review of each proposed demolition or remodeling undertaking will include a literature and records review that concentrates on the date of construction and role of the building or structure in research or programs that have affected the nation's history as well as the architectural significance of the historic property. A report detailing the results of site evaluation is submitted to the IHPA. If the IHPA declares the site ineligible for the NRHP, the project is cleared for construction. If the site is eligible, managers should attempt to avoid adverse impact to the site. If avoidance is not feasible, Fermilab will consult with the IHPA regarding appropriate mitigation or protection plans. Mowing lawns and fields, painting buildings and fences, and harvesting crops are not considered ground-disturbing activities. The Consultant could work with the Facilities Engineering Services Section (FESS) to develop a list of the pertinent buildings and structures and to evaluate these properties for inclusion on the NRHP. Once developed and evaluated, these properties could be color-coded and treated as the other GREEN, YELLOW, AND RED properties.

4.2.1.3 Identification of Known Cultural Resources

Once the DOE has proposed an undertaking and determined its potential environmental impact, the agency will identify historic properties that may be affected by the action. It also gathers sufficient information to evaluate the eligibility of the properties for the NRHP and consults with the IHPA.

4.2.1.4 Impacts to Eligible or Listed Properties

The impact to a property listed on, or eligible for listing on, the NRHP is evaluated by the DOE in consultation with the IHPA. An undertaking affects a historic property when

the undertaking alters characteristics of the property that may qualify it for inclusion on the NRHP. An effect is considered to be adverse if it diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. When the effect of an undertaking on a historic property is expected to be adverse, measures to avoid, protect, or mitigate are identified, when possible.

If the consulting parties select and agree upon a feasible and prudent alternative to avoid the adverse effect of the undertaking, the panel executes a Memorandum of Agreement, acknowledging avoidance of adverse effect. If the consulting parties are unable to agree upon a feasible and prudent alternative to avoid any adverse effect, the adverse effect of the undertaking, is mitigated through data recovery. Upon the failure of the consulting parties to find and agree upon a feasible and prudent alternative to avoid or satisfactorily mitigate the adverse effect, the undertaking is referred to the ACHP.

Mitigation of impacts is attempted only when avoidance and protection are not feasible. Two examples of mitigation are as follows:

1) Mitigation of historic buildings or structures - If destruction or alteration is planned or when renovation cannot be accomplished without altering the historically significant characteristics of a structure, the facility is documented by record according to standard and guidelines of the Historic American Buildings Survey (HABS) or Historic American Engineering Record (HAER) to an extent established through consultation with the chief of the NRHP Division Regional Office. Ordinarily, this entails extensive photography of the facility and documentation of its history. It also can include measured drawings according to the standards and guidelines of the HABS or the HAER, whichever applies. If the undertaking is renovation, and it can be accomplished in keeping with the design characteristics of the building or structure, this would be the preferred alternative.

2) Mitigation of archaeological properties - If an alternative design plan that will substantially alter, disturb, or destroy an archaeological site must proceed, mitigation through data recovery may be the only alternative for avoiding an adverse effect. Data recovery then focuses on those characteristics of the property that make it eligible for the NRHP (that is, the information potential). Development of a research design identifies research questions and data of relevance to address each of the research questions. Data recovery strategies are designed to collect data in all relevant categories. Data recovery plans must be approved in advance by the IHPA and results from data recovery are sent to the IHPA.

4.2.1.5 Unanticipated Discoveries of Cultural Resources

When an undertaking affects a previously unidentified historic property that may be eligible for inclusion in the NRHP, or affects a known historic property in an unanticipated manner, the DOE makes reasonable efforts to avoid or minimize harm to the property until a determination of eligibility is completed.

If during earth-disturbing activity, the contractor conducting the disturbance discovers artifacts or bones, work must stop within 30 meters of the find until the discovery is evaluated. If the find meets the criteria for NRHP eligibility, the DOE provides the ACHP an opportunity to comment. During this evaluation period, work outside a 30-meter radius is continuously monitored. If the find includes human remains, those remains are treated according to NAGPRA and the HSRPA. If a contractor accidently uncovers human remains or graves, work must stop and the contractor must call the county coroner (Kane County at 630/232-3535, DuPage County at 630/407-2600), the DOE Fermi Site Office (Rick Hersemann at 630/840-4122), and the Illinois Historic Preservation office (Joseph Phillippe at 217/785-1279).

4.2.1.6 Nomination for the National Register of Historic Places

The DOE is responsible for nominating historic properties to the NRHP and also is responsible for preserving historic properties. Other responsibilities include ensuring that the historic properties are identified, evaluated, and nominated to the NRHP; managing and maintaining properties listed in or eligible for the NRHP in a way that considers the preservation of their historic, archaeological, architectural, and cultural values; and ensuring that preservation-related activities are carried out in consultation with other federal, state, and local agencies, Native American tribes, and the private sector consistent with regulations issued by the ACHP.

4.2.1.7 Designation and Recognition of National Historic Landmarks

The DOE is responsible for nominating historic properties to National Historic Landmark status. Once documented, the Advisory Board on National Parks, Historic Sites, Buildings and Monuments reviews the properties (National Register Bulletin, Nos, 6 and 15). The review results in the recognition of qualifying, historic properties as National Historic Landmarks, which are then listed in the NRHP.

4.2.1.8 Documentation and Report Preparation and Review

Fermilab staff coordinates the data needed for documentation and preparation of a report. The report includes a description of the undertaking, the evaluation techniques used, and the characteristics of the property or properties being evaluated. Fermilab staff also coordinates this evaluation. The DOE is responsible for determining whether a

property meets the criteria for nomination to the NRHP. The DOE's recommendation is submitted to the IHPA for further review and concurrence.

4.2.2 Archeological Resources Protection Act

The ARPA of 1979 places certain procedural requirements on federal agencies. These requirements pertain to planning and scheduling archaeological surveys, informing the public, and reporting suspected violations. The Phase I surveys of pre-1967 cultural resources on lands at Fermilab have been completed. Phase II testing projects will be completed for sites for which eligibility status remains undetermined. Testing will be conducted on a case-by-case basis for sites that appear to be in jeopardy as a result of a given project.

Procedures used to document suspected ARPA violations at Fermilab must comply with the requirements of Section 14c of ARPA. The DOE point of contact for cultural resources is responsible for documenting violations.

4.2.3 American Indian Religious Freedom Act

The Treaty of Fort Armstrong (signed 21 September 1832), negotiated by Commissioners Major General Winfield Scott and John Reynolds (Governor of Illinois) with the confederated tribes of the Sauk and Fox, opened up the Upper Illinois drainage including the Fermilab area for settlers following the Black Hawk War. Traditional rites and ceremonies on the property ceased at that time. There are no known Native American traditional-use or sacred areas present on Fermilab property.

In the unlikely event that a request for access to a possible sacred site on Fermilab lands was to arise, the DOE point of contact for cultural resources would consult with Native American traditional leaders to evaluate and consider any procedures and/or policies that may act as a barrier to the Native Americans' free exercise of their religious beliefs and practices.

4.2.4 Native American Graves Protection and Repatriation Act, Sections 5, 6, and 7

To ensure compliance with federal mandates and the desires of the Native Americans and those who trace their heritage to the early Euro-American pioneers in the Fermilab area, procedures established in the NAGPRA and in the Illinois HSRPA must be followed if and when human remains and/or associated cultural items are discovered on DOE lands. To date, no such remains or associated funerary objects have been discovered on the Fermilab site.

4.2.5 Curation of Federally-Owned and Administered Archaeological Collections—36 CFR Part 79

The federal regulations at 36 CFR Part 79 concern the manner in which federal agencies, such as DOE, care for the collections of prehistoric and historic archaeological remains and associated records that are excavated or removed in conjunction with their projects and programs. Pursuant to these requirements, artifacts recovered at Fermilab are and will be curated at the ISM. Artifacts were collected during Fermilab Phase I surveys and during various Phase II testing projects.

The artifacts stored at the ISM can be removed by executing a written loan agreement between the ISM and the borrower. The loan agreement specifies the collection being loaned, the length of the loan, and any restrictions on the use of the collection.

## 4.3 PROTECTION PROCEDURES

The NHPA and the ARPA require protection of cultural resources on federal lands. The NHPA also extends this requirement to cultural resources that might be affected by federally licensed or assisted projects, activities, or programs. Executive Order 11593 provides that federal agencies initiate measures and procedures to provide for the maintenance — through preservation, rehabilitation, or restoration—of federally owned and registered sites at professional standards prescribed by the DOE Secretary. Natural forces or human forces, such as authorized actions and illegal activities, may necessitate protective actions.

### 4.3.1 Natural Forces

Protection from natural forces requires monitoring, consultation, and restoration and repair procedures. Effects from natural forces can be water and wind erosion, slumping, flooding, bioturbation, frost heave, or soil compaction. Most of the extant archaeological sites are currently covered with perennial vegetation although some remain in active agricultural fields. The extant architectural sites remain in use for residences and storage in support of Fermilab's mission. Periodic flooding and weathering have adversely impacted some of the buildings and structures.

### 4.3.2 Authorized Actions

Protection of historic properties from human forces includes the responsibility for protecting such sites during authorized activities. The procedure used to screen and track authorized actions that could produce unintended effects on cultural resources at Fermilab is the NEPA review process. This procedure assures the protection of cultural resource sites from the effects of authorized actions, such as new construction, operational activities, repairs or remedial actions. The procedures include posting signage, erecting enclosures around sensitive areas, and planting prairie grasses or other appropriate crops over excavated areas. If adverse effects are noted, procedures will be implemented to restore or repair the situation as specified in Section 4.2.1.2.

#### 4.3.3 Illegal Acts

Protection of historic properties from human forces also includes the responsibility for protection from any illegal or unauthorized acts. Detection, investigation, prosecution, and prevention of illegal acts affecting cultural resources are ensured by site security. Physical security includes on-site security personnel, limiting access to the Fermilab maps that identify the locations of archaeological sites, and preventing looting by covering sites in protective vegetation.

# 5 CULTURAL RESOURCES MANAGEMENT METHODOLOGY

## 5.1 RECORDS AND REPORTS

### 5.1.1 Cultural Resource Site Records

Cultural resource site records at Fermilab consist of completed Illinois Archaeological Survey site forms and survey and testing reports. Prior to 1995 archaeological site files in Illinois were maintained by the Illinois Archeological Survey (IAS), a private organization of professional archaeologists established in 1957. Creating, maintaining, and controlling access to a catalogue of sites in Illinois were important IAS activities. Since 1995, maintaining, updating, and adding to the site file has been the responsibility of the ISM, with access restricted to professional archaeologists in good standing, and to state and federal agency personnel on a need-to-know basis. The ISM has computerized the state site files and streamlined the site record form. Prior to 1995, Fermilab sites were recorded on IAS paper forms. Since 1995, site forms completed by an archaeological contractor have been digitally transmitted directly to the ISM. A sample form is included with in Appendix E. The relevant portion of a 1:24,000 scale United States Geological Survey (USGS) topographic quadrangle with the site boundaries clearly marked accompanies information submitted on paper forms or in digital format.

Before official site numbers are assigned by the ISM (or in the past by the IAS), researchers assign temporary site numbers to site locations. Temporary numbers assigned to sites and isolated finds by Fermilab staff archaeologists between 1971 and 1986 were formatted “DU-NA-1” or “K-NA-1” with consecutive numbers assigned to each new site discovered within DuPage (DU) or Kane (K) counties. MARS utilizes temporary numbers designated by a MARS project and site number; for example, MARS 56-1 identifies the first site listed in MARS Cultural Resource Management Report No. 56. Official site designations at Fermilab have the following format: 11-Du-### or 11-K-###, where “11” refers to the State of Illinois, the letters “Du” or “K” refer to DuPage County or Kane County, and the last three numbers refer to the numerical recording of sites within the county (*i.e.,* 11-Du-301 refers to the 301st site recorded in DuPage County, Illinois). Isolated finds (*e.g.,* MARS 56-IF 2) combine the project number with

the IF (isolated find) notation followed by consecutive numbers for each project. Isolated finds are not recorded with the ISM.

Currently a site form is submitted to the ISM in Springfield as soon as possible after a site is identified during a project. Once a number(s) has been assigned to the site(s) within a project, the site form(s), along with the project report and any appropriate original photographs and IHPA archaeological short report form (ASSR), are submitted by DOE to the IHPA for review and comment. Copies of the Fermilab site forms are on file at the ISM, IHPA, MARS, and at Fermilab.

5.1.2 Cultural Resource Project Records

Typical projects include NEPA-related activities and some cultural resource surveys related to compliance with Section 110 of the NHPA. These records include project reports, site forms, correspondence, field notes, photographs, artifact catalogs, maps, and other records. Project folders containing these records are filed in project number order at the MARS office in Marengo, Illinois. Duplicate project reports and IHPA comment letters are filed within the Fermilab project folder.

5.1.3 Other Cultural Resource Records

Other records, in addition to site records and project records used at Fermilab to address record categories include shovel probe forms, field notes, excavation forms, field check-in forms, cultural material tabulation/inventory forms, lab material control forms, time sheets, maps, and photographs (Appendix E). Oversize maps drafted for project reports and documentary supplemental materials (*e.g.,* nineteenth century plats, county histories, cultural history reprints, and regional CRM reports) are on file at MARS.

5.1.4 Cultural Resource Reports

Data from the analysis of historic and prehistoric artifacts, as well as radiocarbon dates and environmental data, when available, are compiled to identify the context with which a site is associated and to determine the property type represented by each component at the site. A cultural resource report includes a physical description of the site, a summary of the methods and techniques of data collection and analysis, a description of the results of analysis, and a statement of the site's historic context, property type, and integrity. Based on this information, an assessment of NRHP status is made. Reports are curated in both hard copy and digital formats.

The CRM report format includes a project summary, a description of the project (purpose, location, and extent), a summary of the strategy and tactics for data collection and analysis, and a description of the results of analysis. If the location of a project contains archaeological sites, the report includes a statement of the site's historic context

and property-type association and recommendations based on whether the site meets the integrity and data requirements of that property type. The report also includes documentation (*e.g.,* maps and photographs) for any historic or prehistoric sites found and the appropriate IHPA and/or state forms.

## 5.2 INVENTORY

### 5.2.1 Archival Searches

Data from archival searches are used (along with other information) to establish a property's association with historic events, scientific achievements, patterns of history, and its architectural style or engineering characteristics. Archival resources include the Fermilab Farm Book, Fermilab's photo archive that documents farmsteads and construction activities at the facility, other History and Archives Project materials, the General Land Office notes and plats, Illinois Public Domain land sale records, books on local history, land ownership records in the DuPage County and Kane County offices, and federal and state census records, among other resources.

### 5.2.2 Ethnographic Fieldwork

The ethnographic fieldwork method used for identifying and documenting resources of ethnic importance at Fermilab is limited to gathering oral histories from former Fermilab area farmers and their descendants. Native American occupants of Fermilab left northeastern Illinois more than 180 years ago.

### 5.2.3 Architectural Surveys

Architectural survey methodology includes visual inspection and review of engineering records and drawings to document the architectural style, approximate age, integrity, building materials, and function of standing buildings and structures. An architectural survey also notes the relationship of structures within a distinct area (*e.g.,* farmsteads, research facility). Exterior and interior photographs record the condition of the historic property at the time of the survey. Documentary research provides a historic context and architectural analysis and also the main sources of information about extant buildings and structures. Some form of excavation and analysis of artifacts may be necessary to determine the age, historical context, property type, and information potential of an archaeological site with architectural remains.

### 5.2.4 Archaeological Surveys

Procedures to conduct cultural resource surveys meet or exceed the minimum guidelines established by the IHPA. Although all of Fermilab has been surveyed, the following procedures have been included and may be implemented should the facility expand and incorporate unsurveyed areas or should the IHPA ask for re-survey of certain areas.

When possible, agricultural fields (or former agricultural fields) are plowed and disked so that surface visibility is greater than 25%. These fields are then walked at 5-meter intervals. Cultural materials encountered are left in place and marked with pin flags. All find spots are then re-walked and cross-walked at 2-meter intervals to locate additional materials. Concentrations of historic and prehistoric materials are then mapped to show the extent of the concentrations and distances to prominent features on the landscape (*e.g.,* roads, creeks, field boundaries, buildings).

Where surface exposure is less than 25% (*e.g.,* fallow agricultural fields which for some reason cannot be plowed and disked, or wooded and grass-covered parcels), shovel probe survey is necessary. Shovel probes are small subsurface sampling units placed at 10 or 15 meter, intervals (depending on the setting of the survey and its potential for containing cultural material) along transects spaced 10 or 15 meters apart. Probes are excavated to recover any possible cultural materials and to determine soil stratigraphy. Each probe is excavated into sterile subsoil. Generally, in upland areas of northeastern Illinois, probes are 25 cm in diameter and 30 to 50 cm in depth, the depth at which culturally sterile sediments are usually found.

After the soil is removed from the sampling unit, the sides of the hole are scraped and expanded to search for cultural material and to provide a clean soil profile. The soils from the shovel probes are screened through ¼-inch hardware cloth or hand trowelled (depending on the nature of the soils). Soil profiles from shovel probes are described in terms of color, texture, and horizon. All artifacts found are placed in a bag labeled with provenience information (transect and probe number, site, date, project name and number, name of prober) and the depth at which it was recovered. In all cases in which cultural materials are encountered, intermediate probes are excavated at 5-meter intervals to better define the extent of the site.

The potential for deeply buried artifact deposits is restricted to sediment-filled depressions, kettles, or wetlands because Fermilab is located in an upland setting. In these areas, subsurface tests a maximum of 15 meter apart are excavated by bucket auger (10 cm in diameter) up to 2 meters deep to assess archaeological potential, the soil matrix is screened through ¼-inch hardware cloth or hand trowelled to recover artifacts. The location of each auger probe is plotted on a survey area map, and a profile and description of each test hole (including presence, depth, and description of artifacts) are recorded. In areas covered by modern fill, backhoe trenches sometimes are excavated if Holocene sediment deposits are suspected beneath and if the setting indicates a high potential for archaeological deposits.

Information recorded for each parcel of land surveyed includes, but is not limited to, the following: the time of day work commenced and ceased, names of the survey participants, weather conditions, light intensity, description of the area surveyed and the strategy used, kind and extent of any previous disturbance to the survey area, topographic setting, percentage surface visibility, and vegetation and fauna present. The presence, location, and content of any cultural properties, ranging from isolated finds to dense concentrations and historic farm complexes are plotted on U.S.G.S. quadrangles and a sketch map at a larger scale appropriate to the size of the cultural property observed is drawn.

Archaeological sites are defined as places where artifacts, features (*e.g.,* prehistoric or historic trash pits, storage pits, hearths, prepared earthen floors), buildings, structures, and environmental remains are found together. Sites are defined as places where significant traces of human activity are identified. In Illinois the definition of "significant" is left to the discretion of the archaeologist. To achieve continuity at Fermilab, prehistoric archaeological sites are defined as follows:

- In wooded or grass-covered areas, where shovel probing is used to discover archaeological remains, three or more prehistoric artifacts define a site. These may be shaped artifacts (usually stone tools), prehistoric pottery sherds, or indisputable pieces of chipped stone manufacturing debris. The low number of items required to define a site reflects the small amount of soil sampled during shovel probing.

- In agricultural fields, where pedestrian survey is used to discover archaeological remains at least five prehistoric artifacts (as listed above) are required to define a site.

- Find spots with fewer prehistoric artifacts than noted above are designated isolated finds.

- Historical sites are defined by the presence of buildings, structures, footings/foundations, or concentrations of historic period artifacts in either plowed or wooded/grass covered areas.

All designated sites are duly recorded in the State Site Files maintained by the ISM.

## 5.3 EXCAVATION

Some form of excavation and analysis of artifacts is usually necessary to collect data on the age, type, and information potential of an archaeological site. Age ordinarily is

determined by historical documents, radiocarbon dating, geologic context, or artifact styles. Data categories relevant to archaeological sites include, but are not limited to, artifacts—stone tools, debris from stone tool manufacture, bone tools, metal objects, wood and shell tools, historic and prehistoric ceramics, architectural foundations and building debris, personal items made from a variety of materials, features (*e.g.,* trash and storage pits, hearths, privies), animal and plant remains, and geomorphological and soil conditions.

5.3.1 Phase II Test Excavations

Phase II archaeological testing is performed to evaluate properties as to their eligibility for possible inclusion on the NRHP. Evaluation refers to a professional assessment of a property's importance based on the criteria promulgated by the Secretary of the DOI described at 36 CFR Part 60.4. This evaluation determines whether a site meets the defined criteria and, therefore, would be subject to the remainder of the Section 106 process. The procedures used to collect data for evaluation of archaeological sites are discussed in the following list.

*Sites in Plowed Field or Former Plowed Field Context*

1) INTENSIVE SITE SURVEY. After an archaeological property has been identified through survey or collector interview, another intensive site survey is conducted. The site area is plowed or disked to bring a new set of artifacts to the surface. After the site area is rain-washed and sufficiently weathered, archaeologists traverse the surface at 2-meter intervals, north-south and east-west, marking all cultural material or soil anomalies encountered with surveyors' pin flags. A datum point and/or a site grid are established to facilitate collection of artifacts and mapping the site. All flagged objects or grid units are mapped (using surveyor's instruments) and then the objects are collected by flag location or by grid unit. A topographic map of the site is either produced from instrument readings or obtained from engineering. In the laboratory artifacts are tabulated by material type and functional category. All temporally diagnostic artifacts are photographed. Artifact distributions are then plotted on the site topographic map.

If the site area cannot be plowed or disked, auger or shovel probes can be used to collect additional information about the areal extent of the site and the distribution of artifact clusters. The probe intervals vary with the size of the site and its geographic setting. Auger or probe tests should, if possible, reach glacial outwash or till. Since sites in an agricultural setting have been disturbed already by plowing, replowing or disking so that another surface collection can be obtained is preferred to auger or shovel probes.

2) MECHANICAL STRIPPING OF TOPSOIL AND FEATURE EXCAVATION. If the archaeological site is in plowed field context, a portion of the site surface (the amount required by IHPA) is mechanically stripped of topsoil in discrete block using the distribution of artifacts collected from the surface as a guide for the placement of those blocks. The subsoil is then inspected for features or intact midden. A sample of features and/or one or more excavation units in midden are excavated to determine the functions or activities associated with the features or midden and to assess the state of floral and faunal preservation. Features are mapped and photographed in plan view and then cross-sectioned to observe the feature profile. One-half of a feature is excavated as a unit until the bottom of the feature is reached. The sterile subsoil adjacent to the feature is removed so that the feature profile can be defined, drawn, and photographed. The remainder of the feature is then excavated in cultural units or episodes of fill in a manner similar to test unit excavation described below.

*Sites in Wooded or Other Undisturbed Contexts*

1) If a site is found through shovel probing or auguring in undisturbed context, testing consists of hand-excavating a percentage of the site. The percent of the site excavated is determined through consultation with the IHPA. Usually excavation of between 2 and 5% of the site is considered adequate.

2) TEST UNIT EXCAVATION. Test excavation data are used to determine the number and the horizontal and vertical extent of archaeological components, the functional characteristics of each component, the presence and condition of floral and faunal remains, and, if possible, the season(s) of site occupancy. After a datum point and site grid are established and a topographic map of the site is obtained, units ranging in size from 50 $cm^2$ to 2 $m^2$ are excavated. Test excavations are conducted according to the following minimum procedures:

a) Test excavations must be excavated, at a maximum, in natural geologic or cultural units. If the natural or cultural units are more than 10 cm in depth, they may be excavated in smaller increments. If natural or cultural units are in question or difficult to distinguish, the units may be excavated in 10 cm arbitrary levels. All soil matrix must be screened through 6 mm (¼-inch) or finer mesh.

b) All artifacts are collected by test unit and excavation level or excavation level section. A 2.0 to 10.0 liter sample of soil should be saved from each excavation level for flotation (a procedure used to recover small plant and animal remains). The recovery and analysis of such material enable the archaeologist to

reconstruct diet and habitat use and to recover small-sized artifacts such as glass beads.

c) Records maintained include the excavation forms for each level of each excavation unit, drawings and photographs of all features, and a profile of at least one wall of each test pit.

d) Test excavations are to be fenced or roped off during the time the units are open and are to be filled in after the data collection and analyses are complete.

3) HISTORIC PERIOD SITES. Historic period sites both in plowed and undisturbed context often contain architectural features such as house foundation wall, well, cisterns. Additional photographs and drawings, and specialized excavation techniques, sometimes including the use of heavy machinery, may be necessary to document these architectural remains.

5.3.2 Large-Scale Excavations

Methods for large-scale excavations depend on the results of the Phase II test excavations and are determined by the archaeological contractor, the DOE, and the Fermilab ESHQS. A research design addressing relevant research questions and the respective methodologies to be used to answer those questions is submitted by the DOE to the IHPA for review. Approval of the research design by the IHPA is required prior to conducting the excavation.

5.4 STRUCTURE AND FACILITY MANAGEMENT

5.4.1 Structure and Facility Documentation

As mentioned above, buildings (usually farm related) present when land was purchased for the construction of Fermilab were evaluated for NRHP significance in 2013-14. All other buildings and structures (Fermilab buildings and structures dated 1967 and later) are less than 50 years old and have not been evaluated for potential significance as individual buildings or as building complexes. None have been evaluated as to scientific importance but will be treated on a case-by-case basis (see Section 3.2.3).

5.4.2 Structure and Facility Maintenance

The maintenance of buildings and structures at Fermilab involves routine activities to keep Fermilab functioning properly to support of the DOE missions. These buildings and structures are, for the most part, active research facilities less than 50 years old with machines and other equipment that are continually upgraded.

### 5.4.3 Structure and Facility Mitigation

Methods for mitigation would be necessary if buildings or structures eligible for the NRHP were identified at Fermilab. If such structures are identified, mitigation measures will be specified.

## 5.5 LABORATORY TREATMENT

### 5.5.1 Processing

Methods to be used for laboratory processing of cultural resources recovered at Fermilab include flotation of soil samples and artifact cleaning and conservation. Subcontractors process all materials recovered during survey and excavation at Fermilab.

Soil samples from feature and midden context are processed in a flotation device that separates objects lighter than the floating medium (usually water) from those that are heavier. The light fraction often contains charred wood, nuts, seeds, and small bones that provide subsistence information and samples for radiocarbon dating. Heavy fractions include all materials larger than 1/16-inch—very small pieces of lithic debris or tool fragments, beads, and other objects too small to be recovered during dry screening.

Artifacts arrive at the laboratory packaged in provenience-specific brown paper bags or plastic field bags. Most artifacts are cleaned in warm water with soft brushes to remove adhering soil and are repackaged in clean plastic zippered bags sorted by material class. Metal, leather, or fabric items are dry-brushed to remove dirt and may require special cleaning or treatment prior to curation. Carbonized macrobotanical samples from flotation, carbon samples for radiocarbon dating, and friable materials may also require special treatment during processing.

### 5.5.2 Analysis

Methods of analysis are site-specific and are delineated in each survey, testing, and mitigation report prepared by the archeological contractor and submitted to the DOE and the IHPA.

## 5.6 CURATION

### 5.6.1 Preservation

Typical prehistoric artifacts recovered at Fermilab are stone tools, stone debitage, or prehistoric ceramics. Once collected and cleaned they remain stable if properly packaged. Some historic artifacts such as uncarbonized wood, metal, leather, or fabric may require more specialized treatment.

5.6.2 Inventory, Accession, Labeling, and Cataloging

After cleaning, all artifacts are inventoried and labeled. Archaeologists separate inorganic and organic items by material class to facilitate analysis by specialists. Fermilab artifacts such as lithics, ceramics, glass, and metals have been inventoried and analyzed by the MARS staff. Lithics are described by artifact type, raw material, size of tool/debris, and treatment. Ceramics (both historic and prehistoric) are described by paste, decoration, vessel form and size, if possible. Glass is divided into flat glass and container glass categories and then subdivided by color, shape, manufacturing technique and function. Metals are described by metal type, form, and function. Floral and faunal materials are counted and described in general terms before they are sent to specialists for further analysis.

Each prehistoric tool is given an accession number. The artifact is labeled directly with the accession number and/or placed in a zippered bag with an identification card labeled with the site number, provenience, date, recorder, and accession number in permanent ink. Lithic manufacturing debris is packaged by recovery unit with an identification card labeled with the site number, provenance, date, and recorder. Diagnostic historic artifacts are also marked with provenience information and packaged by material type. All materials are recorded in an artifact inventory catalogue.

5.6.3 Identification, Evaluation, and Documentation

Methods used for identifying, evaluating, and documenting collections of cultural resources at Fermilab consist of comparing items to collections and published documents that depict and describe regional material culture. References useful for identifying stone tools include Justice (1987), Perino (1985), and Goldstein and Osborn (1988). References for identifying prehistoric ceramic type include a notebook with photographs, drawings, type descriptions, and references for northern Illinois (Bird n. d.), and other published reports that describe how ceramics were manufactured or that document specific ceramic types. There are a wealth of books and articles that deal with the identification of historic artifacts.

5.6.4 Storage and Maintenance

The Fermilab cultural resource collections are stored and maintained at the ISM.

5.6.5 Periodic Inspection and Remedial Preservation

No program of periodic inspection has been designed for the cultural resources collections stored at the ISM.

5.6.6 Study

The Fermilab collections are available for scientific, religious, and educational uses subject to the terms and conditions specified by the ISM.

5.7 PRESERVATION

5.7.1 Protection from Natural Forces

Methods for protecting sites from potential deterioration and degradation (*e.g.,* erosion) caused by natural forces, such as flooding or heavy winds, include covering archaeological sites with permanent vegetation and maintaining the structural stability of architectural sites (*e.g.,* installing sump pumps as needed, securing and maintaining the historic fabric of the buildings and structures).

5.7.2 Protection from Human Forces

A limited number of options are also available for protecting sites from human forces. The objectives are to prevent worker and public activity that might lead to unauthorized collection or vandalism and to shield a property from the direct impacts of construction. Alternatives for limiting access to significant properties include fencing the properties to eliminate even inadvertent access by construction personnel and workers at the facility; posting the properties with signs advising the reader that destruction, alteration, or collection of historic and prehistoric archaeological materials is a federal crime under the ARPA; and periodic patrolling by the Fermilab security force.

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# Appendix A:
Current Facility at Fermi National Accelerator Laboratory

Rochelle Lurie and M. Catherine Bird

## Fermilab Vision and Mission

President Lyndon B. Johnson signed a bill on 21 November 1967 to commission the Illinois National Accelerator Laboratory, later (1974) named Fermi National Accelerator Laboratory to honor the 1938 Nobel Prize winning physicist Enrico Fermi. As the United States' premier particle physics laboratory, Fermilab works on the world's most advanced particle accelerators, explores the smallest building blocks of matter, probes the farthest reaches of the universe, and seeks out the nature of dark matter and dark energy. Fermilab's scientists and engineers collaborate with more than 20 countries on physics experiments.

The Fermi Research Alliance LLC (FRA), a partnership of the University of Chicago and Universities Research Association Inc. consortium of 86 research universities, manages Fermilab for the U.S. Department of Energy Office of Science.
With a stated vision to solve the mysteries of matter, energy, space, and time for the benefit of all, Fermilab strives to lead the world in neutrino science with particle accelerators, lead the nation in the development of particle colliders and their use for scientific discovery, and advance particle physics through measurements of the cosmos. Fermilab's stated mission is to drive discovery by building and operating world-leading accelerator and detector facilities, performing pioneering research with national and global partners, and developing new technologies for science that support U.S. industrial competitiveness.

In addition to Fermilab's research mission, the facility also trains accelerator scientists, many of whom take their expertise into the applied fields that use accelerators. Fermilab also places a priority on the education of young scientists. Workshops, fieldtrips, and classes at the Lederman Science Center and other Fermilab facilities expose both teachers and students to the principles of physics. In keeping with Robert Wilson's original vision, Fermilab offers more than physics. As a designated a National Environmental Research Park (1989), the protected outdoor laboratory offers study opportunities relating to some of the complex and poorly understood ecological issues that confront humanity. Fermilab encourages researchers from universities, environmental organizations, and the private sector to take advantage of the contrasting natural habitat at Fermilab and the nearby metropolitan area of Chicago. The open campus facilitates environmental studies, free from controlled security access common at the other research parks (Visual Media Services 2003).

**Directors' Visions and Legacies**

Six physicists have directed the Fermi National Accelerator toward achieving the laboratory' mission and have brought with them various visions of how best to accomplish the mission given financial challenges and the changing landscape of particle physics. The following biographical sketches as well as the statements presented above have been edited from information presented by Fermilab on their website <www.fnl.gov> unless otherwise noted.

***Robert Rathbun Wilson,* Director 1967-1978**

Robert R. Wilson (1914-2000), the founding director of Fermilab known for his work on the Manhattan project, served as director from 1967 to 1978. An accomplished artist and an innovative physicist, the Fermilab facility reflects Wilson's personal aesthetic. Wilson influenced construction and design, upholding scientific standards to ensure Fermilab's potential as the world's most powerful particle accelerator. He also felt just as strongly about the aesthetics of the complex—influencing building shapes and use of bold colors both on the inside and the outside of the buildings, as well as overseeing the installation of modern sculptures, many of which Wilson designed. Perhaps as a result of his life as a Montana ranch hand, Wilson also appreciated the aesthetics of nature and incorporated them into the Fermilab design in the form of prairie restoration projects and a resident bison herd (Hilts 1982). Wilson's notable awards include the Elliott Cresson Medal (1964), the National Medal of Science (1973), the Enrico Fermi Award (1984), and the Andrew Gemant Award (1995). Under Wilson's supervision the Main Ring accelerator, built 1969-1971, became the highest energy proton synchrotron in the world. Wilson also was responsible for the base-line archaeological and historical studies at Fermilab (Early 1970).

***Leon Max Lederman,* Director 1978-1989**

Leon M. Lederman (b. 1922), the director from 1978 to 1989, proposed the idea of a National Accelerator Laboratory in 1963 and encouraged Robert R. Wilson to take on the task of designing and building the facility (Hilts 1980). In 1977, Lederman lead the experiment at Fermilab that provided the first evidence for the existence of the bottom quark, an essential element in the Standard Model. During his tenure as director, the development of Tevatron brought Fermilab to scientific prominence. Lederman has been an active and effective spokesperson for the value of theoretical physics and has emphasized the importance of mathematics and science education. He strongly advocates a change in high school curricula, replacing the biology-chemistry-physics sequence currently taught with a physics-chemistry-biology sequence reasoning that physics provides the conceptual underpinning for the other more complex sciences. Lederman was instrumental in establishing the Illinois Mathematics and Science Academy, a state-run residential high school that opened to students in 1986. He served as Resident

Scholar at the academy beginning in 1998. Lederman's notable awards include the Nobel Prize for Physics (1988) and the Vannevar Bush Award for his extraordinary contributions to understanding the basic forces and particles of nature (2012).

***John Peoples, Jr.,* Director 1989-1999**

John Peoples, Jr.'s (b. 1933) research brought him to NAL in 1971, where he earned a reputation as a strong leader and manager in research and development. Peoples served as Director at Fermilab from 1989 to 1999, a time of transition at the lab. Although one of eight finalists in the competition for the Superconducting Super Collider, a site in Texas rather than Fermilab won the competition leaving Fermilab's role in physics research uncertain. "Peoples took up the banner to upgrade the Tevatron with the Main Injector and began to build local, state, and federal support for Fermilab's future," according to the biographical information posted on Fermilab's website. Ultimately, congress cancelled funding for the SSC experiment in 1993 with Peoples selected to direct its shutdown. During his tenure as Fermilab director, the laboratory announced evidence for the discovery of the top quark (1994). Peoples relinquished his position as director to return to research in experimental astrophysics. He directed the Sloan Digital Sky Survey (1998-2003) during the construction and early phase of the collaborative survey (SDSS Legacy Survey). The survey has created detailed, multi-colored, three-dimensional maps of 35% of the sky as of 2014 according to the SDSS website <www.sdss.org>. The research will allow scientists to address fundamental questions about the evolution of the universe. Peoples' notable award is the American Physical Society's Robert R. Wilson Prize for Achievement in the Physics of Particle Accelerators (2010).

***Michael Stewart Witherell,* Director 1999-2005**

Michael S. Witherell (b. 1949), most recently a professor at the University of California-Santa Barbara with a distinguished career in education, research, and public outreach, was named Fermilab Director on 1 July 1999. His 30-year career in experimental particle physics includes experiments at every major particle physics laboratory in the country. When elected to the National Academy of Sciences in 2001, the academy noted Witherell's pioneering work in the application of two new technologies, silicon vertex detectors and high-speed data acquisition systems to the study of particle physics and the fundamental structure of matter. While at Fermilab (1993) Witherell began working on the design and construction of the Stanford Linear Accelerator Center's (SLAC) BaBar multi-year experiment to study elementary particles. In an e-mail sent to staff on 12 September 2002, Witherell noted, "The world of particle physics will enter a new era in the next decade. Important new discoveries will be made at the energies that become accessible in this period. These discoveries will alter our view of the physical laws that shape our everyday world. They could also give us a

sharper picture of what occurred at the beginning of our universe, when the big bang produced great quantities of the exotic particles that we study with accelerators today. The Fermilab Tevatron will be at the center of this research." Witherell faced funding challenges during his tenure and security changes following the 9/11 Attack. Witherell's notable award is the W. K. H. Panofsky Prize in Experimental Particle Physics (1990) for work on an experiment at Fermilab in the 1980s studying charm quarks.

***Piermaria J. Oddone,* Director 2005-2013**

Piermaria Oddone, a native of Peru (b. 1944), became director on 1 July 2005 and retired eight years later on 1 July 2013. Oddone completed his undergraduate work in physics at the Massachusetts Institute of Technology and received his doctorate in the discipline in 1970 from Princeton University. While holding a postdoctoral research fellowship at Caltech, Oddone authored a proposal for E-21A, which Fermilab later accepted (October 1970) as one its first round of experiments. He began his career with the United States Department of Energy at Lawrence Berkeley National Laboratory in 1972. Later the laboratory appointed Oddone Director of the Physics Division at Berkeley Lab and, subsequently, the Laboratory Deputy Director for scientific programs.

During Oddone's tenure as director (2005-2013), Fermilab concluded a 28-year run for the Tevatron collider that discovered the quark. The completion of the Large Hadron Collider (LHC) at CERN forced Fermilab to adjust its role in the exploration of the energy. Under Oddone's direction, Fermilab entered a period of unparalleled scientific progress in high-intensity particle beams, experimentation on muons and neutrinos, and advanced scientific knowledge concerning dark matter. Oddone's notable award is the W. K. H. Panofsky Prize in Experimental Particle Physics (2005) for the invention of the Asymmetric B-Factory particle collider. He has received fellowships from the American Physical Society and American Academy of Arts and Sciences, and is known for his role in the Stanford Linear Accelerator Center's BaBar collaboration that helped to discover matter-antimatter asymmetry in B mesons. Oddone is an elected member of the National Academy of Sciences in both the United States (2011) and Peru.

***Nigel Lockyer,* Director 2013-present**

Nigel Lockyer (b. 1952 in Scotland) became director of Fermilab in September 2013. Raised in Canada (B.S. 1975, York University-Toronto), Lockyer received his doctorate from Ohio State University in 1980. Lockyer spent four years at SLAC (originally named Stanford Linear Accelerator Center) National Accelerator Laboratory at Stanford University as a postdoctoral research fellow. At the University of Pennsylvania, beginning in 1984, his research focused on high-energy particle experiments testing symmetries and studying quarks. Prior to his arrival at Fermilab, Lockyer served as director of TRIUMF in Vancouver, British Columbia, Canada's national laboratory for

particle and nuclear physics (2007-2013). His research has been conducted with the Collider Detector experiment at Fermilab (CDF). The project achieved world acclaim for studying the top quark. In recent years, Lockyer's research has included experimental searches for hypothesized "super-symmetric" particles. Lockyer's notable award is the W. K. H. Panofsky Prize in Experimental Particle Physics (2006) for his work on the particle known as the bottom quark.

**Fermilab Experiments, Accomplishments, and Innovations**

Key discoveries utilizing Fermilab's accelerators include experiments that have provided evidence for Higgs boson production (2012); have discovered the the top quark (1995), the bottom quark (1977), and a quasar at a distance of 27 billion light years (2000); have observed tau neutrinos subatomic particles (2000) and the existence of direct CP violation in kaon decay subatomic particles (1999); and have confirmed the evidence of dark energy through observation of distant supernovae (Table 1).

Table 1. Key discoveries and events at Fermilab (adapted from < www.fnal.gov/pub/ about/whatis/ timeline.html> from data retrieved 10 November 2014 (current through 28 March 2013).

| Relevant date | Key discovery | Notations |
|---|---|---|
| *1960s* | | |
| 1 December 1968 | Linac (linear accelerator) groundbreaking | |
| 3 October 1969 | Main Ring groundbreaking | |
| *1970s* | | |
| 1 March 1972 | First 200 GeV beam through the Main Ring | |
| 30 June 1977 | Bottom quark discovery announced | |
| 5 July 1979 | DoE authorizes Fermilab to build Tevatron | |
| *1980s* | | |
| 3 July 1983 | Tevatron accelerates protons to 512 GeV | World record |
| 16 August 1983 | Antiproton Source groundbreaking | |
| 16 February 1984 | First 800 GeV beam in Energy Doubler | |
| 13 October 1985 | Observation of proton-antiproton collisions | First by CDF |
| 21 October 1986 | First 900 GeV beam in Energy Doubler | |
| *1990s* | | |
| 14 February 1992 | DZero collider detector commissioned | |
| 22 March 1993 | Main Injector accelerator groundbreaking | |
| 4 September 1993 | New 400 MeV Linac commissioned | |
| 26 April 1994 | First direct evidence for top quark announced | |
| 2 February 1995 | Tevatron world record for the number of high-energy proton-antiproton particle collisions | |

Table 1. Key discoveries and events at Fermilab, continued.

| Relevant date | Key discovery | Notations |
|---|---|---|
| 3 March 3 1995 | Discovery of the Top Quark announced | |
| 11 September 1997 | Main Ring accelerator switched off | |
| 5 March 1998 | Discovery of B-sub-c Meson announced | |
| 1 June 1999 | Main Injector accelerator dedicated | |
| *2000s* | | |
| January 2000 | Tevatron fixed-target program ends | 43 experiments |
| 31 May 2000 | NuMI project groundbreaking | |
| 21 July 2000 | DONuT reports the first direct observation of the tau neutrino | |
| 1 March 2001 | Collider Run II of the Tevatron begins | |
| 12 September 2002 | MiniBooNE experiment begins taking data | |
| 14 August 2003 | MINOS far detector starts data taking with cosmic rays | |
| 16 July 2004 | Tevatron achieves a peak luminosity | 1E32 cm -2sec -1 |
| 6 December 2004 | NIU launches Institute for Neutron Therapy | |
| 4 March 2005 | First neutrino beam launched to Minnesota | |
| 9 July 2005 | Electron cooling of antiprotons in Recycler | |
| 10 February 2006 | Antiproton Source exceeds rate of 20 mA/hr. | First time |
| 30 March 2006 | MINOS first measurement of delta m^2 | |
| 9 September 2006 | Tevatron achieves a peak luminosity | 2E32 $cm^{-2}sec^{-1}$ |
| 25 September 2006 | Discovery of B_s matter-antimatter oscillations: 3 trillion times/second | |
| 23 October 2006 | Discovery of Sigma-sub-b baryons | |
| 7 January 2007 | Most precise measurement of the W boson mass by a single experiment | |
| 11 April 2007 | MiniBooNE refutes LSND result and idea of fourth neutrino | |
| June 2007 | Discovery of the cascade-b baryon | Down-strange-bottom combo |
| 17 March 2008 | Tevatron achieves a peak luminosity | > 3E32 cm -2sec -1 |
| 25 March 2008 | Tevatron delivers 50 inverse picobarns in a single week | |
| 30 July 2008 | Observation of ZZ diboson (Tevatron) | |
| 4 August 2008 | Tevatron experiments start restricting the allowed Higgs mass range | |
| September 2008 | Both CDF and DZero reach five inverse femtobarns of luminosity | |
| 9 March 2009 | Discovery of single top quark production | |
| 11 March 2009 | DZero announces the world's best measurement of W boson mass | |
| 18 March 2009 | Discovery of a new quark structure | |

Table 1. Key discoveries and events at Fermilab, concluded.

| Relevant date | Key discovery | Notations |
|---|---|---|
| 29 June 2009 | Discovery of the Omega-sub-b baryon | |
| *2010s* | | |
| 30 March 2010 | First LHC collisions at 7 TeV | |
| 16 April 2010 | Tevatron achieves a peak luminosity | 4E32 $cm^{-2}sec^{-1}$ |
| 21 September 2010 | Expansion of test accelerator facility | |
| 24 June 2011 | MINOS sees candidate events for muon neutrino to electron neutrino oscillation | |
| July 2011 | Discovery of the Xi-sub-b | |
| 30 September 2011 | Tevatron produces final proton-antiproton collisions; data analysis will continue | |
| 16 December 2011 | Illinois Accelerator Research Center groundbreaking | |
| 23 January 2012 | Liquid-Argon Test Facility groundbreaking | |
| 15 February 2012 | Test beam facility exceeds 500 collaborators | |
| 2 March 2012 | Measurement of W boson mass announced | World's best |
| 7 March 2012 | First beam to SeaQuest experiment | |
| 29 March 2012 | Construction begins of MicroBooNE | |
| 5 June 2012 | MINOS experiment announces world's best measurement of key property of neutrinos | |
| 25 June 2012 | Underground hall for NOvA near detector construction begun | |
| 21 August 2012 | Cockcroft-Walton accelerator retired | |
| 6 September 2012 | NOvA detector, first block completed | |
| 17 September 2012 | World's most powerful digital camera opens eye, records first images in hunt for dark energy | |
| 28 March 2013 | NOvA neutrino detector records first 3-D particle tracks | |

***New Frontiers on the Illinois Prairie: Wilson's Vision and Legacies***

Fermilab historian Lillian Hoddeson and Fermilab archivist Adrienne Kolb have examined the "roles of vision and leadership in creating and directing" Fermilab and published their conclusions in *Perspectives in Physics* (Hoddeson and Kolb 2003:67-86) and in *Fermilab: Physics, the Frontier & Megascience* (Hoddeson, Kolb, and Westfall 2008). This essay utilizes these two references (unless otherwise noted). Beyond the roles of personal vision and leadership, directors have faced funding challenges and the somewhat related problem of maintaining the laboratory's preeminent place in the world of high-energy physics while adapting to the evolving scientific community.

Fermilab reflects Robert R. Wilson's personal aesthetic of frontier imagery, literally and figuratively. His vision endures and distinguishes the laboratory from other DoE facilities. Wilson designed and built Fermilab on 6,800 acres of farmland—creating an enduring research facility and recreating the Illinois prairie with wild flowers and grazing buffalo. Leon Lederman described Wilson's accomplishments in a 1979 presentation "Wilson and Fermilab" presented as part of a symposium entitled: *Aesthetics and Science: Proceedings in Honor of Robert R. Wilson.* During the planning and building years at the National Accelerator Laboratory, Lederman served as a trustee of the managing consortium with which laboratory director Wilson interacted. Later, Lederman became a "user" of the facilities under Wilson's directorship. Lederman developed an intimate knowledge of Wilson and Fermilab. While Hoddeson and Kolb (2003:67) praise Wilson for delivering the machine [accelerator] ahead of schedule, under budget, and with more experimental areas than planned, Lederman (1979) provides details (Table 2). Wilson managed to get the construction completed a year ahead of schedule and the beam operating three months earlier than targeted. Wilson brought the project in at $6.5 million under budget and increased the energy from the promised 200 GeV to 400/500 GeV nine months later without the additional expenditure of the budgeted $70 million. The number of target stations, particle beams, experiments set up, and experiments run per year in 1974 significantly exceeded the number planned in 1967 for each category.

Table 2. Wilson's promises about machine parameters (from Lederman 1979).

| Promised detail | Wilson's 1967 Design Report | Delivered |
|---|---|---|
| Construction completion | June 1972 | June 1971 |
| Beam date | June 1972 | March 1972 |
| Energy level | 200 GeV | 400/500 GeV |
| Budget for energy increase | $70 million | $0 |
| Number of experiments set up | 12 (1967) | 27 (1974) |

Additionally, Wilson brought in over 600 non-resident "users" (300 expected in 1967) from 82 institutions in 30 of the states as well as "users" from 101 foreign institutions in 24 countries, achieving more international participation than any other laboratory at the time. Despite Wilson's many achievements, physicists felt that Fermilab had met with limited success during his tenure by not producing large, sophisticated experiments with funds invested in the accelerator rather than in experiments (Hoddeson, Kolb, and Westfall 2008:194-195). Following administrative reorganization during the tenures of presidents Ford and Carter, funding for high-energy physics research became more competitive (Hoddeson and Kolb 2003). Wilson resigned as director at Fermilab in a protest over funding. Wilson's successor Leon M. Lederman,

Fermilab's highest profile user with an outstanding record of achievement, found a way to make the university-laboratory partnership pay dividends.

***Road to Megascience: Lederman's Vision***

Hoddeson and Kolb (2003) report that Fermilab's guiding vision changed with the installation of Lederman as director. Lederman envisioned a "user's paradise," a research laboratory that would accommodate physicists rather than risk losing their proposed experiments to other competing facilities. To address the future path for Fermilab, Lederman appointed a panel of experts and invited all Fermilab physicists to a open-forum discussion meeting held 11 November 1978. After review, Lederman decided that the laboratory could collide beams at higher energy and, therefore, preserve Fermilab's position at the leading edge of high-energy physics. After completing the Energy Doubler with superconducting magnets in 1983, the basis for the Tevatron accelerator, Fermilab initiated two megascience programs: the proton-antiproton colliding beams program and the enhanced fixed-target program. Hoddeson, Kolb, and Westfall (2008:262) define "megascience" as a bigger big science shaped by restricted funding for physics (post-1970). Experiment strings yielded long-term, continuous programs of results, minimized funding risks, and produced results in a timely manner.

Although Lederman had never managed a budget the size of Fermilab's, he had considerable experience working on science funding issues, writing funding proposals, and had developed an extensive network that he tapped to develop funding strategies for Fermilab. Hoddeson and Kolb (2003) note that Lederman's social, political, and professional skills proved successful in Washington, D. C. for keeping budget cuts to a minimum and for acquiescing to bureaucratic requirements. Fermilab's relationship with the DoE improved dramatically under Lederman's directorship.

Under Lederman's innovative and stabilizing leadership, Fermilab added research facilities and built sounder buildings and laboratories allowing Fermilab to leap forward from big science to megascience. Although Lederman transformed and modernized the programs and facilities toward his efforts in making Fermilab a user's paradise, scheduling issues persisted although conditions often improved. Lederman built a collaborative research community, set a direction at the facility and delegated the management of details, and enlisted volunteers and employees to make cultural/social improvements at the laboratory and to draw in the neighboring communities through educational opportunities. Lederman and the laboratory's site managers pursued a designation of Fermilab as a National Environmental Research Park[1] (achieved 1989).

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[1] Other designated National Environmental Research Parks (NERP) include Savannah River NERP, Oak Ridge NERP, Los Alamos NERP, Idaho NERP, Hanford NERP, and Nevada NERP (from east to west).

***Superconducting Super Collider Affair and CERN***

After completion of the Energy Doubler in 1983, Lederman turned his attention to the Superconducting Super Collider, which he envisioned as the next machine for Fermilab—an international, collaborative venture. As noted previously, site selection for the Superconducting Super Collider went to a site near Dallas, Texas and Congress killed the epic project in 1993 after completing about 20 percent of the build and spending $2 billion. The failure of the project to secure sufficient foreign investment (only India pledged money) and cultural conflict between scientists/academic management and the military industry are among the key aspects of the Superconducting Super Collider's cancellation. European countries prioritized maintaining success at CERN. The project also ran over budget and behind schedule. The frontier of particle physics resides in Geneva, Switzerland at the CERN laboratory; with its Large Hadron Collider (LHC), it is the world particle physics laboratory envisioned by Lederman. However, the demise of the Superconducting Super Collider and competition from CERN did not end particle physics research in the United States in general or at Fermilab in particular.

***Light on the Horizon: Three Frontiers or Five Drivers?***

Oppressive budget cuts during the early years of Peoples' tenure led him to prioritize the collider experiments at the expense of the fixed-target experiments according to Hoddeson *et al* (1980:340). After managing the shutdown of the partially built collider in Texas, Peoples returned to Fermilab (1994) with a renewed sense of confidence and with ambitious plans for new fixed-target experiments. Fermilab's discovery of the top quark (1995) led to strong support from the President Bill Clinton's administration for fundamental research.

In 2008, the Department of Energy's High Energy Physics Advisory Panel suggested that high energy physics comprises three frontiers: 1) the Energy Frontier, 2) the Intensity Frontier, and 3) the Cosmic Frontier. The three-frontier concept provided Fermilab with a new framework for its research. At the Energy Frontier, scientists use particle experiments to explore the fundamental constituents and architecture of the universe (such as the top quark and the bottom quark). At the Intensity Frontier, scientists use fixed-target experiments to explore the fundamental particles and forces of nature (such as CP violation in kaons and the tau neutrino). At the Cosmic Frontier, scientists use fixed-target experiments to investigate the fundamental laws of physics (such as origins of high-energy, evidence for dark energy, defining the horizon). Experiments at the intensity and cosmic frontiers helped the lab maintain its status as a world leader in the field of high-energy physics. Lockyer suggests that the five intertwined science drivers—Higgs, neutrinos, dark matter, dark energy, and new particle—are much better concepts with which to organize research concepts than the three frontiers. Fermilab also works closely with CERN, opening the LHC Remote Operations Center in 2007.

In the 21st century Fermilab continues to work on the basics of particle physics as well as contribute to a growing knowledge of astrophysics. Fermilab scientists strive to learn more about the nature of elementary particles and test the Standard Model.

**Physical Plant**

Many of the buildings at Fermilab bear Robert Wilson's aesthetic stamp, even those built after his time as director. The most prominent is Wilson Hall, the facility's central administrative building, inspired by the Gothic architecture of the Saint-Pierre Cathedral of Beauvais, France. The central atrium with its surrounding offices and views of the rapidly developing countryside from its upper floors create a feeling of internal and external community. Another building that gives Fermilab its distinctive feel is the Meson Laboratory with its roof of inverted steel culvert half-sections. These vividly painted half sections are approximately the same size as the concrete sections of the Tevatron tunnel. The roof, like the built-up main accelerator ring, is a visual representation of the activities carried out at Fermilab. The Fermilab logo itself is based on the shapes of two types of magnets, quadrupoles and dipoles, commonly used in high-energy particle beamlines. Another reference to science is the pagoda-like building at the Proton Laboratory with its DNA double helix staircase. The Neutrino Laboratory's modified geodesic dome is also unique. Each triangular section of the dome (currently covered with copper sheathings) is "constructed of two triangular pieces of colored reinforced fiberglass, forming a sandwich over stacked steel beverage cans. In an early recycling effort, the public donated the 120,000 cans used in the dome." The Fermilab Master Planning Task Force produced a Mission Plan and Vision Statement in 2013. A review to identify significant buildings and structures associated with the scientific work on campus will be conducted on a case-by-case basis. The Illinois Historic Preservation Agency and the Kane County Historic Preservation Commission informally suggested that the facility is eligible for inclusion on the National Register of Historic Places (David Halpin of the IHPA and Julia Thavong of the KCHPC, personal communication to M. Catherine Bird of MARS on 5/7/2014).

Fermilab comprises 268 extant non-farmstead related buildings and trailers (*e.g.,* houses, offices, accelerators, laboratories, maintenance shops, service buildings, storage and other facilities) and 37 structures (*e.g.,* water tanks, rail siding storage, tunnels; electrical substations, transmission lines, and generators; water and septic system components; fencing; lighting; culverts; and bridges), excluding roads and sidewalks (Tables 3 through 5). MARS evaluated 156 buildings associated with extant farmsteads and other historic properties that predate Fermilab's acquisition of the land (Bird 2013a, Bird 2013b, Bird 2013d, see also Appendix C). Fermilab has recorded all buildings and structures on a "Facilities Information Management System Complete Owned Building

Report" form. This form provides information on the size, age, condition, and function of each building. An example of this form is in Appendix E.

Table 3. Extant buildings and trailers at Fermilab that have not been evaluated.

| ID No. | Property Name | Yr. Built | Building Code | Usage Code |
|---|---|---|---|---|
| 520 | Proton Pole Building at FB 50 | 1902 | Programmatic General Storage | MB02 |
| 803 | Industrial Building #2A | 1902 | Manufacturing/Production Labs | MB02 |
| 848 | Lundy Barn near railhead) | 1910 | Programmatic General Storage | MB02 |
| 850 | Super Shed | 1910 | Programmatic General Storage | MB02 |
| 936 | Remote Operations Property | 1965 | General Storage | MB02 |
| 206 | Booster Gallery East & West | 1970 | Office | MB08 |
| 212 | Linac, X- and Transfer Gallery | 1970 | Accelerator Building | MB03 |
| 220 | A-1 Service Building | 1970 | Accelerator Building | MB13 |
| 221 | A-2 Service Building | 1970 | Accelerator Building | MB13 |
| 222 | A-3 Service Building | 1970 | Accelerator Building | MB13 |
| 223 | A-4 Service Building | 1970 | Accelerator Building | MB13 |
| 224 | B-0 Service Building | 1970 | Accelerator Building | MB13 |
| 225 | B-1 Service Building | 1970 | Accelerator Building | MB13 |
| 226 | B-2 Service Building | 1970 | Accelerator Building | MB13 |
| 227 | B-3 Service Building | 1970 | Accelerator Building | MB13 |
| 228 | B-4 Service Building | 1970 | Accelerator Building | MB13 |
| 230 | C-0 Service Building | 1970 | Accelerator Building | MB04 |
| 231 | C-1 Service Building | 1970 | Accelerator Building | MB13 |
| 233 | C-2 Service Building | 1970 | Accelerator Building | MB13 |
| 234 | C-3 Service Building | 1970 | Accelerator Building | MB13 |
| 235 | C-4 Service Building | 1970 | Accelerator Building | MB13 |
| 238 | D-0 Service Building | 1970 | Accelerator Building | MB13 |
| 240 | D-1 Service Building | 1970 | Accelerator Building | MB13 |
| 241 | D-2 Service Building | 1970 | Accelerator Building | MB13 |
| 242 | D-3 Service Building | 1970 | Accelerator Building | MB13 |
| 243 | D-4 Service Building | 1970 | Accelerator Building | MB13 |
| 245 | E-0 Service Building | 1970 | Accelerator Building | MB13 |
| 246 | E-1 Service Building | 1970 | Accelerator Building | MB13 |
| 248 | E-2 Service Building | 1970 | Accelerator Building | MB13 |
| 249 | E-3 Service Building | 1970 | Accelerator Building | MB13 |
| 250 | E-4 Service Building | 1970 | Accelerator Building | MB13 |
| 251 | F-0 (Rf) Service Building | 1970 | Accelerator Building | MB04 |
| 252 | F-1 Service Building | 1970 | Accelerator Building | MB13 |
| 253 | F-2 Service Building | 1970 | Accelerator Building | MB13 |
| 256 | F-3 Service Building | 1970 | Accelerator Building | MB13 |
| 257 | F-4 Service Building | 1970 | Accelerator Building | MB13 |
| 854 | Master Sub-Station | 1970 | Other Service Buildings | MB04 |
| T136 | Portakamp | 1970 | General Storage | MB05 |
| 214 | Central Utility Building | 1971 | Other Service Buildings | MB04 |
| 218 | A-0 Service Bldg./Vehicle | 1971 | Accelerator Building | MB07 |
| 239 | D-0 Vehicle Access Building | 1971 | Accelerator Building | MB13 |
| 283 | Switchyard Service Building | 1971 | Accelerator Building | MB04 |
| 408 | Meson Detector Building | 1971 | Applied Physics Laboratory | MB04 |
| T002 | Portakamp 1307 - Lab 6, Vil. | 1971 | Office | MB16 |
| T052 | Portakamp 905 - Meson Cryo | 1971 | Programmatic General Storage | MB05 |
| T053 | Portakamp 903 - Meson Cryo | 1971 | Programmatic General Storage | MB05 |
| T054 | Portakamp 3324- Meson Cryo | 1971 | Programmatic General Storage | MB05 |

Table 3. Extant buildings and trailers at Fermilab that have not been evaluated, cont'd.

| ID No. | Property Name | Yr. Built | Building Code | Usage Code |
|---|---|---|---|---|
| 508 | Proton Service #1 | 1972 | Programmatic General Storage | MB13 |
| 510 | Proton Service #2 | 1972 | Programmatic General Storage | MB13 |
| 800 | Industrial Building #1 | 1972 | Applied Physics Laboratory | MB04 |
| 801 | Industrial Building #2 | 1972 | Materials Handling/Processing | MB04 |
| 804 | Industrial Building #3 | 1972 | Assembly Facilities | MB04 |
| 855 | Casey's Pond Pump House | 1972 | Other Service Buildings | MB09 |
| T101 | Portakamp 9665- NW Booster | 1972 | Office | MB05 |
| 400 | Meson Wonder Enclosure | 1973 | Applied Physics Laboratory | MB16 |
| 424 | Meson Polarized MP7-MP8-MS5 | 1973 | Programmatic General Storage | MB16 |
| 426 | Meson Center MC7 - MB7 | 1973 | Programmatic General Storage | MB16 |
| 428 | Meson Center MC8 | 1973 | Programmatic General Storage | MB16 |
| 434 | Meson SVCS MS6 & Test Worm | 1973 | Programmatic General Storage | MB16 |
| 500 | Proton Pagoda | 1973 | Programmatic General Storage | MB03 |
| 512 | Proton Service #3 | 1973 | Programmatic General Storage | MB13 |
| T028 | Portakamp 10959 | 1973 | Office | MB05 |
| T029 | Portakamp 8780 | 1973 | Office | MB05 |
| T049 | Portakamp 11348 | 1973 | Office | MB05 |
| T050 | Portakamp 11347 | 1973 | Office | MB05 |
| T103 | Portakamp 13057 | 1973 | Office | MB05 |
| T105 | Portakamp 11893 | 1973 | Office | MB05 |
| 001 | Wilson Hall & Auditorium | 1974 | Office | MB09 |
| 258 | D0 Gas Shed | 1974 | Hazardous/Flammable Storage | MB05 |
| 259 | B12 Gas Shed | 1974 | Hazardous/Flammable Storage | MB05 |
| 402 | Ms-1 Meson Service Building | 1974 | Accelerator Building | MB13 |
| 404 | Ms-2 Meson Service Building | 1974 | Accelerator Building | MB13 |
| 406 | Ms-3 Meson Service Building | 1974 | Accelerator Building | MB13 |
| 504 | Proton Tagged Photon Lab | 1974 | Programmatic General Storage | MB04 |
| 600 | Neutrino Lab A | 1974 | Physics Laboratories | MB04 |
| 602 | Neutrino Lab B | 1974 | Programmatic General Storage | MB04 |
| 604 | Neutrino Lab C | 1974 | Physics Laboratories | MB04 |
| 606 | Neutrino Lab D | 1974 | Physics Laboratories | MB04 |
| 608 | Neutrino Lab E | 1974 | Applied Physics Laboratory | MB04 |
| 614 | Neutrino Lab Nwa | 1974 | Physics Laboratories | MB04 |
| 616 | Neutrino Service #1 | 1974 | Accelerator Building | MB13 |
| 618 | Neutrino Service #2 | 1974 | Programmatic General Storage | MB13 |
| 622 | Neutrino Service #4 | 1974 | Programmatic General Storage | MB13 |
| 624 | Neutrino Target Service | 1974 | Hazardous/Flammable Storage | MB08 |
| 862 | Well House #3 | 1974 | Other Service Buildings | MB16 |
| 864 | Well House #4 | 1974 | Other Service Buildings | MB16 |
| 938 | Receiving Warehouse #1 | 1975 | Programmatic General Storage | MB05 |
| 506 | High Intensity Laboratory | 1978 | Programmatic General Storage | MB04 |
| 514 | Proton Service #4 | 1978 | Assembly Facilities | MB13 |
| 851 | Central Helium Liquefier | 1978 | Manufacturing/Production Related Labs | MB04 |
| 932 | Farm Book 38 Fire Station | 1978 | Fire Station | MB05 |
| T045 | Portakamp 6181 | 1979 | Office | MB05 |
| T066 | Portakamp 6182 | 1979 | Office | MB05 |
| T067 | Portakamp 6194 | 1979 | Office | MB05 |
| 229 | B-48 Kicker Building | 1980 | Accelerator Building | MB13 |
| 255 | F-27 Power Supply Building | 1980 | Accelerator Building | MB13 |
| 299 | A-1 Refrigeration Building | 1980 | Accelerator Building | MB13 |
| 300 | A-2 Refrigeration Building | 1980 | Accelerator Building | MB13 |

Table 3. Extant buildings and trailers at Fermilab that have not been evaluated, con't.

| ID No. | Property Name | Yr. Built | Building Code | Usage Code |
|---|---|---|---|---|
| 410 | Meson Central Cryogenics | 1980 | Applied Physics Laboratory | MB05 |
| 620 | Neutrino Service #3 | 1980 | Programmatic General Storage | MB13 |
| 805 | Industrial Building #4 | 1980 | Materials Handling/Processing Facilities | MB04 |
| T022 | Portakamp 6195 | 1980 | Office | MB05 |
| T027 | Portakamp 6183 | 1980 | Office | MB05 |
| T076 | Portakamp 6189 | 1980 | Programmatic General Storage | MB05 |
| T077 | Portakamp 6184 | 1980 | Programmatic General Storage | MB05 |
| T079 | Portakamp 6190 | 1980 | Programmatic General Storage | MB05 |
| 237 | C-48 Kicker Building | 1981 | Accelerator Building | MB13 |
| 247 | E-17 Kicker Building | 1981 | Accelerator Building | MB13 |
| 254 | F-23 Power Supply Building | 1981 | Accelerator Building | MB13 |
| 301 | A-3 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 302 | A-4 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 303 | B-1 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 304 | B-2 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 305 | B-3 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 306 | B-4 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 307 | C-1 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 308 | C-2 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 309 | C-3 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 310 | C-4 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 311 | D-1 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 312 | D-2 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 313 | D-3 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 314 | D-4 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 315 | E-1 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 316 | E-2 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 317 | E-3 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 318 | E-4 Refrig Bldg & Test Facility | 1981 | Accelerator Building | MB01 |
| 319 | F-1 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 320 | F-2 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 321 | F-3 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 322 | F-4 Refrigeration Building | 1981 | Accelerator Building | MB13 |
| 232 | C-17 Kicker Building | 1982 | Accelerator Building | MB13 |
| 244 | D-48 Kicker Building | 1982 | Accelerator Building | MB13 |
| 502 | Proton Assembly | 1982 | Assembly Facilities | MB05 |
| 516 | Proton Service #5 | 1982 | Programmatic General Storage | MB04 |
| 853 | Railsiding Storage Shed | 1982 | General Storage | MB05 |
| T091 | Portakamp 37079 - Transfer Yard | 1982 | Office | MB05 |
| T098 | Portakamp 6187 -NW Berm | 1982 | Office | MB05 |
| T099 | Portakamp 6197- NW Berm | 1982 | Office | MB05 |
| T100 | Portakamp 6198- NW Berm | 1982 | Office | MB05 |
| T102 | Portakamp 6193 - NW Berm | 1982 | Office | MB05 |
| T104 | Portakamp 9688- NW Berm | 1982 | Office | MB05 |
| T106 | Portakamp 6200 - NW Berm | 1982 | Office | MB05 |
| T107 | Portakamp 6186- NW Berm | 1982 | Office | MB05 |
| T121 | Portakamp 37080 - Site 39, Pkg | 1982 | General Storage | MB05 |
| T122 | Portakamp 39427- S. Transfer. | 1982 | Office | MB05 |
| 323 | Collider Detector Facility CDF | 1983 | Applied Physics Laboratory | MB04 |
| 518 | Proton Service #6 | 1983 | Programmatic General Storage | MB04 |
| 806 | Industrial Center Building | 1983 | Assembly Facilities | MB04 |

Table 3. Extant buildings and trailers at Fermilab that have not been evaluated, con't.

| ID No. | Property Name | Yr. Built | Building Code | Usage Code |
|---|---|---|---|---|
| 201 | AP30 Service Building | 1984 | Accelerator Building | MB03 |
| 202 | AP10 Service Building | 1984 | Accelerator Building | MB03 |
| 203 | AP50 Service Building | 1984 | Accelerator Building | MB03 |
| 204 | AP-0 Target Hall | 1984 | Accelerator Building | MB04 |
| 324 | G2 Service Building | 1984 | Accelerator Building | MB13 |
| 412 | Meson Assembly Building | 1984 | Assembly Facilities | MB05 |
| 414 | Meson Service #4 | 1984 | Accelerator Building | MB04 |
| 522 | Training Center | 1984 | Office | MB04 |
| 610 | Laboratory F | 1984 | Applied Physics Laboratory | MB04 |
| 612 | Laboratory G | 1984 | Applied Physics Laboratory | MB04 |
| 623 | Neutrino Service Building #7 | 1984 | Accelerator Building | MB04 |
| 809 | Magnet Storage | 1984 | Programmatic General Storage | MB05 |
| 940 | Receiving Warehouse #2 | 1984 | General Storage | MB05 |
| T137 | Portakamp 47141- CDF East Side | 1984 | Office | MB05 |
| T138 | Portakamp 47142 - CDF East Side | 1984 | Office | MB05 |
| T139 | Portakamp 47174 - CDF East Side | 1984 | Office | MB05 |
| 430 | Meson West MW7 - MW8 | 1985 | Programmatic General Storage | MB16 |
| 613 | Neutrino Service Building #E | 1985 | Programmatic General Storage | MB04 |
| 626 | Pb6/Pb7 Wide Band | 1985 | Applied Physics Laboratory | MB04 |
| 628 | HDCF - Grid Comp Ctr | 1985 | Data Center | MB04 |
| 700 | NML | 1985 | Applied Physics Laboratory | MB04 |
| 807 | Industrial Compressor Building | 1985 | Other Service Buildings | MB04 |
| T142 | Portakamp 52328 - CDF East Side | 1985 | Office | MB05 |
| T144 | Portakamp 52302 - CDF East Side | 1985 | Office | MB05 |
| T145 | Portakamp 47026 - CDF East Side | 1985 | Office | MB05 |
| T146 | Portakamp 54750 - CDF East Side | 1985 | Office | MB05 |
| T147 | Portakamp 54794 - CDF East Side | 1985 | Office | MB05 |
| 207 | Booster Tower Southwest | 1986 | Office | MB03 |
| 208 | Booster Tower Southeast | 1986 | Office | MB03 |
| 236 | C-4 Pump House | 1986 | Other Service Buildings | MB13 |
| 416 | Polarized Proton Lab - Mp | 1986 | Applied Physics Laboratory | MB04 |
| 418 | Meson Service Ms7 | 1986 | Accelerator Building | MB04 |
| 420 | Meson West Lab -- MW9 | 1986 | Office | MB04 |
| 422 | BD Cryogenic Engineering Office | 1986 | Applied Science Laboratory | MB04 |
| 615 | Neutrino Service #0 | 1986 | Accelerator Building | MB04 |
| 325 | D-0 Assembly Building | 1987 | Applied Physics Laboratory | MB04 |
| T178 | Trailer 92138 - ICB Prkg | 1987 | Office | MB05 |
| 003 | Feynman Computer Center | 1988 | Data Center | MB03 |
| 205 | AP50 Gas Storage Building | 1988 | Hazardous/Flammable Storage | MB13 |
| 923 | Roads/Grounds Equip Stge | 1988 | General Storage | MB05 |
| 925 | Salt Storage Facility | 1988 | General Storage | MB16 |
| T085 | Portakamp 66103 | 1988 | Office | MB05 |
| T111 | Portakamp 67288 | 1989 | Programmatic General Storage | MB05 |
| T149 | Portakamp 67752 | 1989 | Office | MB05 |
| T151 | Portakamp 77652 | 1989 | Office | MB04 |
| T157 | Portakamp 78382 | 1989 | Office | MB04 |
| T173 | Portakamp 77538 - D0 | 1989 | Office | MB04 |
| 216 | A0 Kicker Building | 1990 | Accelerator Building | MB09 |
| 217 | A0 Lab Building | 1990 | Applied Physics Laboratory | MB04 |
| 849 | Nevis Barn | 1991 | Programmatic General Storage | MB01 |
| 852 | Pine Street Guard House | 1991 | Guard Houses | MB05 |

Table 3. Extant buildings and trailers at Fermilab that have not been evaluated, con't.

| ID No. | Property Name | Yr. Built | Building Code | Usage Code |
|---|---|---|---|---|
| 931 | Radiation Physics Calibration | 1991 | Equipment Calibration Shops | MB05 |
| T163 | Portakamp 73273 - CDF East Side | 1991 | Office | MB05 |
| T164 | Portakamp 73276 - CDF East Side | 1991 | Office | MB05 |
| T165 | Portakamp 73275 - CDF East Side | 1991 | Office | MB05 |
| T166 | Portakamp 73274 - CDF East Side | 1991 | Office | MB05 |
| T167 | Portakamp 74907 - CDF East Side | 1991 | Office | MB05 |
| 005 | Science Education Center | 1992 | Other School Buildings | MB04 |
| T168 | Portakamp 77999 - CDF East Side | 1992 | Office | MB05 |
| T169 | Portakamp 78000 - CDF East Side | 1992 | Office | MB05 |
| T170 | Portakamp 78001 - CDF East | 1992 | Office | MB05 |
| T171 | Portakamp 78002 - CDF East | 1992 | Office | MB05 |
| T156 | Portakamp 85692 | 1993 | Office | MB05 |
| T174 | Portakamp 84127 | 1993 | Office | MB05 |
| T175 | Portakamp 84128 - D0 | 1993 | Office | MB05 |
| T176 | Portakamp 84129 - Lab E | 1993 | Office | MB05 |
| T177 | Portakamp 84115 | 1993 | Office | MB05 |
| 760 | MI 60 Service Building | 1994 | Accelerator Building | MB04 |
| 929 | Fuel Service Center | 1994 | Office | MB13 |
| 630 | KTeV / NM4 | 1995 | Physics Laboratories | MB04 |
| 710 | MI 10 Service Building | 1996 | Accelerator Building | MB07 |
| 720 | MI 20 Service Building | 1996 | Accelerator Building | MB07 |
| 730 | MI 30 Service Building | 1996 | Accelerator Building | MB07 |
| 740 | MI 40 Service Building | 1996 | Accelerator Building | MB07 |
| 750 | MI 50 Service Building | 1996 | Accelerator Building | MB07 |
| 752 | MI 52 Service Building | 1996 | Accelerator Building | MB07 |
| 762 | MI 62 Service Building | 1996 | Accelerator Building | MB07 |
| 840 | Low Level Waste Handling Bldg. | 1996 | Materials Handling/Processing Facilities | MB04 |
| 708 | MI 8 Service Building | 1997 | Accelerator Building | MB04 |
| T148 | Portakamp - Kautz Rd. | 1997 | Office | MB05 |
| 267 | F-17 Service Building | 1998 | Accelerator Building | MB09 |
| 860 | Kautz Road Sub-Station | 1998 | Other Service Buildings | MB04 |
| 330 | C0 Experimental Hall | 1999 | Materials Handling/Processing Facilities | MB10 |
| 605 | Lab CD Cross Connect Building | 1999 | Office | MB04 |
| T180 | Industrial Center Building North | 2000 | Other Service Buildings | MB05 |
| T181 | Industrial Center Building North | 2000 | Office | MB05 |
| T182 | Industrial Center Building North | 2000 | Office | MB05 |
| T183 | Industrial Center Building North | 2000 | Office | MB05 |
| 941 | Scale House | 2001 | Other Service Buildings | MB15 |
| 326 | PPD Office Building at D-0 | 2002 | Office | MB05 |
| 327 | PPD Office Building at CDF | 2002 | Office | MB05 |
| 413 | Shield Block Storage Shed | 2002 | Programmatic General Storage | MB16 |
| 601 | Lab AB Bridge Bldg | 2002 | Office | MB03 |
| 712 | Mini BooNE Target Hall & SVCS | 2002 | Applied Physics Laboratory | MB04 |
| 713 | MI 13A Counting House | 2002 | Accelerator Building | MB01 |
| 780 | Mini BooNE Detector Building | 2002 | Physics Laboratories | MB16 |
| T179 | LSC Guardhouses | 2003 | Guard Houses | MB05 |
| 210 | MuCool Service Building | 2004 | Accelerator Building | MB09 |
| 731 | MI 31 Service Bldg. E-Cool | 2004 | Accelerator Building | MB04 |
| 765 | NuMI Target Service Building | 2004 | Accelerator Building | MB04 |
| 785 | MINOS Service Building | 2004 | Physics Laboratories | MB16 |
| T184 | Polarized Proton Lab - MP9 T184 | 2004 | Office | MB05 |

Table 3. Extant buildings and trailers at Fermilab that have not been evaluated, concluded.

| ID No. | Property Name | Yr. Built | Building Code | Usage Code |
|---|---|---|---|---|
| 609 | Lab BEG Connection | 2005 | Office | MB04 |
| T192 | Portakamp 107752 | 2005 | Office | MB05 |
| 856 | Batavia Road Guard House | 2006 | Guard Houses | MB05 |
| T185 | Fire Department Fitness Trailer | 2006 | Physical Fitness | MB05 |
| T186 | Rail Head Office Trailer | 2006 | Office | MB05 |
| 714 | SciBooNE | 2007 | Physics Laboratories | MB09 |
| 715 | MI 14 Service Building | 2009 | Accelerator Building | MB04 |
| 739 | MI 39 Service Building | 2009 | Accelerator Building | MB04 |
| 786 | NoVA Near Detector | 2010 | Physics Laboratories | MB12 |
| 808 | IB3A - Industrial Building 3A | 2010 | Applied Physics Laboratory | MB04 |
| 409 | MP8 Shed | 2011 | Accelerator Building | MB01 |
| 701 | NML Electrical Service Building | 2011 | Applied Physics Laboratory | MB04 |
| 702 | Cyro Module Test Facility | 2011 | Applied Physics Laboratory | MB04 |
| 787 | Liquid Argon Test Facility | 2013 | Physics Laboratories | MB16 |
| 857 | Wilson Rd Guardhouse | 2013 | Guard Houses | MB05 |
| 209 | MC-1 | 2014 | Physics Laboratories | - |
| 328 | Office, Technical and Education | 2014 | Office | - |

Identification numbers for trailers start with a "T."

Table 4. Building code key for non-farmstead buildings listed in Table 3.

| Material | Code | Description (Material, framing) | No. of Bldgs. |
|---|---|---|---|
| *Wood* | MB01 | Wood, light frame | 4 |
| | MB02 | Wood, commercial and industrial | 5 |
| *Steel* | MB03 | Steel, moment frame | 9 |
| | MB04 | Steel, braced frame | 60 |
| | MB05 | Steel, light frame | 82 |
| | MB07 | Steel, frame with infill shear walls | 8 |
| *Concrete* | MB08 | Concrete, moment frame | 2 |
| | MB09 | Concrete, shear walls | 6 |
| | MB10 | Concrete, frame with infill shear walls | 1 |
| | MB12 | Precast concrete, frames with concrete shear wall | 1 |
| *Masonry* | MB13 | Masonry, reinforced masonry load-bearing walls | 73 |
| | MB15 | Masonry, unreinforced masonry load-bearing walls | 1 |
| *Other* | MB16 | Other | 14 |
| | No code | None given | 2 |
| | | **Total non-farmstead buildings** | **268** |

Table 5. Extant structures at Fermilab that have not been evaluated.

| ID no. | Property Name | Usage Code |
|---|---|---|
| 401030123 | Storage Water Tanks | 4171 Tanks, Pressure |
| 406030124 | Railsiding Storage | 4010 Storage (Open Pavement) |
| 701030125 | Research Accelerator Ring/Tunnel | 3221 Accelerators, Ring |
| 7111030126 | Electrical Substations | 8979 Substations |
| 7112030127 | Electrical 345kV Transmission Lines | 8929 Electrical Cables, Primary |
| 7113030128 | Electrical Distribution, 13.8kV Feeders | 8939 Electrical Cables, Secondary |
| 7113030129 | Electrical Distribution Lines, Tertiary | 8949 Electrical Cables, Tertiary |
| 7115030130 | Electrical Generators | 5906 Electric Generators |
| 7131030131 | Water System Potable Distribution | 8129 Piping |
| 7132030132 | ICW Piping Distribution System | 8131 Piping |
| 7134030134 | Water Wells – Non-potable | 5171 Wells |
| 7136030135 | Pumping Station – Non-potable | 8171 Pumping Stations |
| 7142030136 | Natural Gas Piping | 8329 Piping (Natural Gas) |
| 7155030139 | Sewage System Pumped and Gravity | 8549 Piping, Pressure (Sewage) |
| 7156030140 | Septic Tanks | 5569 Septic Tanks (Sewer) |
| 7163030141 | Chilled Water Distribution Lines | 8719 Other |
| 7164030142 | Cooling Ponds and Reservoirs | 5789 Cooling Ponds Or Reservoirs |
| 724030143 | Communication System | 7009 Other, Communications Systems |
| 802030147 | Fences | 2429 Fencing |
| 808030149 | Street Lighting | 6919 Street Lights |
| - | Culverts | 2629 Culvert |
| - | Dams, MI, Lake Law, A.E. Sea | 2819 Dams |
| - | Fuel Pumps | 6271 Pol Services For Vehicles |
| - | Laterals and Ditches | 2619 Canals and Laterals |
| - | Sewage Lift Stations | 8561 Lift Stations (Sewage) |
| - | NML tunnel | 3221 Accelerators, Ring |
| - | NuMI Beamline | 3221 Accelerators, Ring |
| - | NuMI tunnel | 3221 Accelerators, Ring |
| - | Oil Tanks | 4221 Tanks (Oil) |
| - | Pedestrian Bridge 1 WH to LSC | 1168 Public Access Bridges (Walking) |
| - | Pedestrian Bridge 2 Cryo Bike path | 1168 Public Access Bridges (Walking) |
| - | Kress Creek Sampling Bridge | 1168 Public Access Bridges (Walking) |
| - | Vehicle Bridge 1 M.I. | 1769 Controlled Access Bridges |
| - | Vehicle Bridge 2 M.I. 12 | 1769 Controlled Access Bridges |
| - | Fox River Pumping Station | 8171 Pumping Stations (Non-Potable) |
| - | Stormwater Piping Gravity and Pressure | 8629 Piping, Gravity (Stormwater) |
| - | Truck Scale | 6719 Vehicle Weighing Facility |

# Appendix B:
Physical Landscape

M. Catherine Bird and Rochelle Lurie

Since the earliest human occupation of northeastern Illinois, the Fermilab property has supported a variety of ecosystems that change across space and have changed through time. The Physical Landscape appendix presents a consideration and analysis of the relationship(s) between the landscape and settlement choices made by native groups and later pioneer settlers. Key factors to consider include Fermilab's location and climate, glacial history and surficial geology, surface water drainage, development of soils, fundament vegetation, and human alterations to the landscape. In addition paleoclimate studies help ascertain how far back in time these relationships hold.

## Location and Climate

Fermilab straddles both the border of Kane and DuPage Counties as well as the divide between the Fox and DuPage river basins within the interior of the North American continent. Residents in northeastern Illinois enjoy a typical continental climate with ameliorating effects due to the location's proximity to Lake Michigan. Cold winters and hot summers with relatively moderate precipitation mark the Hot Summer Continental Climate of the region (Peel *et al* 2007). Climate data, presented in the county soil surveys (Deniger 2003:16, Calsyn 1999:13-14), attest to the wide-ranging temperature variation between summer and winter with Kane County reporting summer averages of 71.4° F and winter averages of 24.3° F; and with DuPage County reporting summer averages of 72.0° F and winter averages of 24.7°F. Just over half of the precipitation (53-54 percent) falls during the spring and summer (April through September) with an average rainfall of 38.3 inches in Kane County and 36.6 inches in DuPage County. Snowfall averages 30.8 inches and 36 inches in Kane and DuPage counties, respectively. For nine years out of ten, meteorologists record 143 frost-free days in Kane County compared to 134 in DuPage County (Deniger 2003:207, Calsyn 1999:143). With 67 percent of the available sun shining during the summer months, in combination with the reported temperatures and reliable rainfall, the region supports a productive agricultural economy in the rural areas of the region.

## Glacial and Surficial Geology

Schwegman (1973:2) places Fermilab wholly within the Morainal Section of the Northeastern Morainal Natural Division of Illinois given the unique natural environment and biotic communities of the division. The Morainal Section comprises the most recently glaciated landscapes in Illinois (Late Livingston and Woodstock phases of the

Wisconsin Episode at Fermilab)[1] with hummocky or ridge-like uplands, intervening plains, and youthful drainages systems creating a region of varied geomorphologic character (Curry 2008:7, 35). Prominent glacial landforms within the division may include moraines, kames, and kettle-holes. Willman (1971) mapped till and outwash deposits as comprising the surficial geology of Fermilab: 1) Minooka Moraine (primarily Kane County) and Manhattan-Monooka Groundmoraine (primarily DuPage County) till deposits of the Wedron Group, and 2) extensive sand and gravel pro-glacial outwash plain deposits of the Henry Formation (along Kress Creek). Kirk Road roughly follows the crest of the Minooka Moraine (Wiggers 1997:88). Hansel and Johnson (1996) reclassified and enhanced the stratigraphic framework and classification system used by Willman. The terminology in this appendix follows Hansel and Johnson's system although Willman's mapping remains accurate for this overview.

The Quaternary surface deposits, measuring 16 to 34 meters deep within the facility, overlay Paleozoic Silurian-age bedrock of fine-grained, cherty and non-cherty dolomite. The dolomite formed in the warm, shallow, tropical, inland sea that transgressed the region over 400 million years ago (Mikulic *et al.* 2010:158). Bedrock exposures (190-210 meters above mean sea level) include those within Batavia's Quarry Park (west of Fermilab), along Mill Creek near the mouth at the Fox River (north-northwest of Fermilab), elsewhere along the Fox River, and in a few places along the West Branch of the DuPage River south of Naperville (southeast of Fermilab) (Fineberg and Curry 2013, Curry 2001, and Landon and Kempton 1971:8).

At the request of the United States Army Corps of Engineers (USCoE), the Illinois State Geological Survey (ISGS) sampled 67 borings from the unconsolidated glacial drift across Fermilab shortly after acquisition of the parcel in 1967 to assess engineering properties (Landon and Kempton 1971) (Figure 1). The ISGS identified five stratigraphic units: in descending order, Unit A, surficial loess and local alluvial and lacustrine silt and sand; Unit B, silty and clayey till with minor inter-bedded silt; Unit C, silty and sandy tills including water-laid silt, sand, and gravel; Unit D, till with more that 50% clay; and Unit E, silty and sandy till with considerable amounts of outwash and gravel. The USCoE utilized the classification of stratigraphic units as a framework for evaluating the engineering properties of each unit including density, moisture content and permeability, compressive strength, swell and shear, and settlement time rates (Langdon and Kempton 1971:16).

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[1] Late Livingston Phase (20,750 to 20,000± calendar years B.P.), Woodstock Phase (20,000± to 18,150 calendar years B.P.)

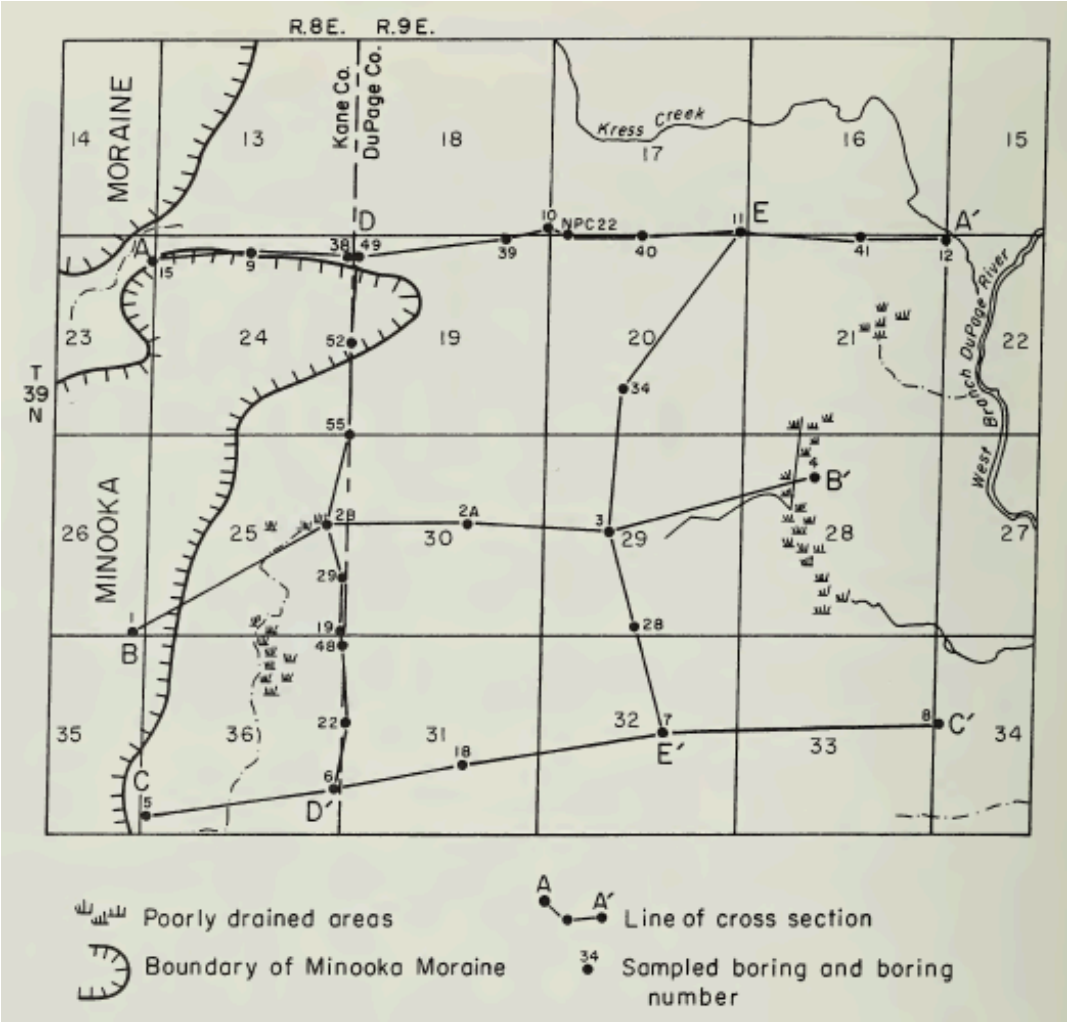


Figure 1. Map showing location of poorly drained areas, boundary of the Minooka Moraine, borings, and cross-section lines (from Landon and Kempton 1971:4).

**Drainage of Surface Water**

The Fox River-DuPage River drainage divide traverses the Fermilab property (Early 1971:9) as noted by the solid blue line in the figures below. Water captured in both rivers eventually flows into the Illinois River with the Fox River emptying into the Illinois at Ottawa, Illinois and the DuPage emptying into the DesPlaines and thence the Illinois at Channahon, Illinois. On Fermilab property, surface water drains westward toward the Fox River via Mahoney Creek and Indian Creek or drains eastward toward the West Branch of the DuPage River via Kress Creek, an unnamed tributary of the West Branch itself, or one of two tributaries of Ferry Creek (Figures 2 and 3). Figure 2-1 produced by Christopher B. Burke Engineering of the watershed and tributary map of the West Branch of the DuPage River (CBBE 2006) illustrates changes in the drainage divide following construction of the Tevatron ring at Fermilab.

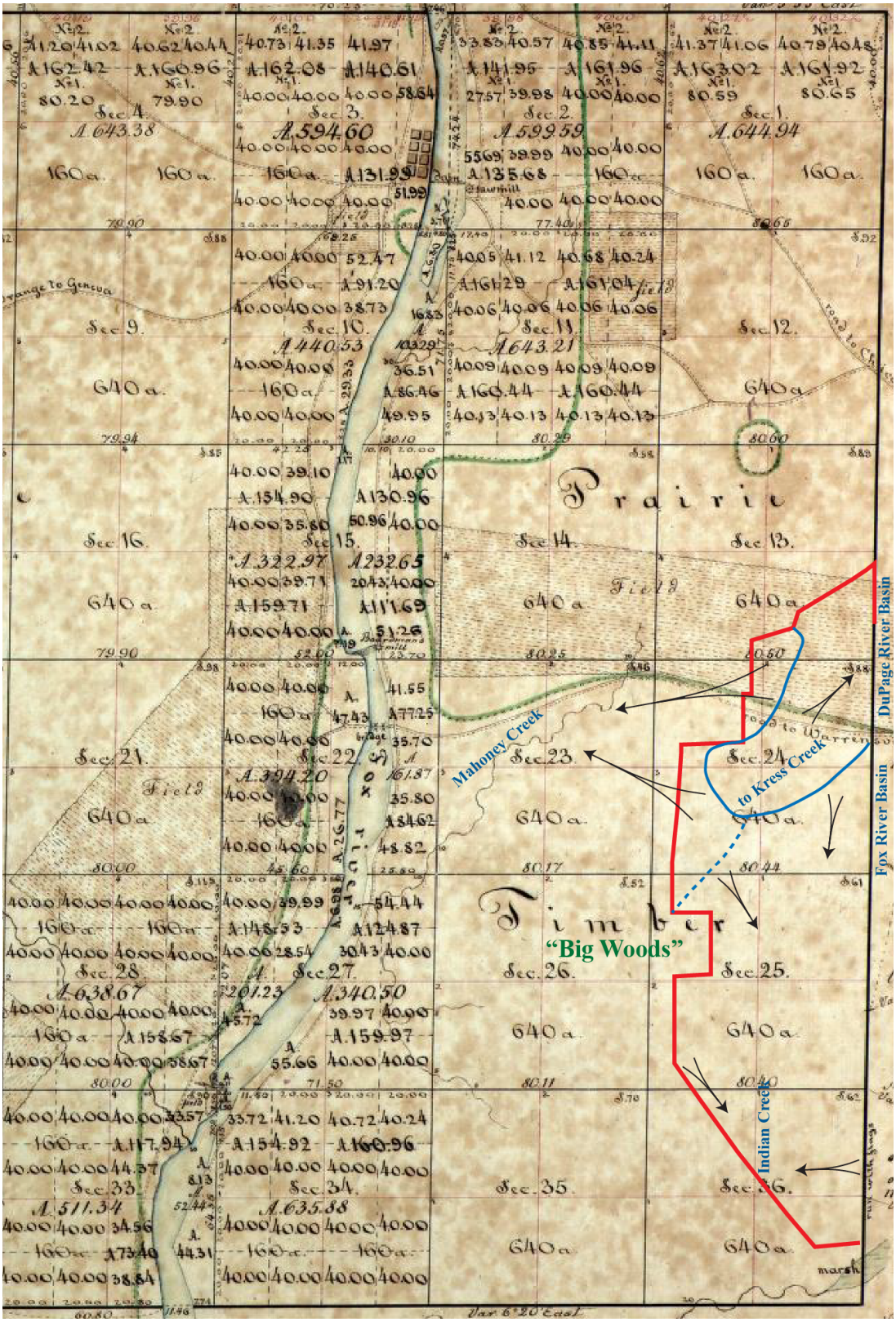


Figure 2. GLO plat of Batavia Township dated 1840 with an overlay showing the surface water drainage divides (blue) and the Fermilab boundaries (red).

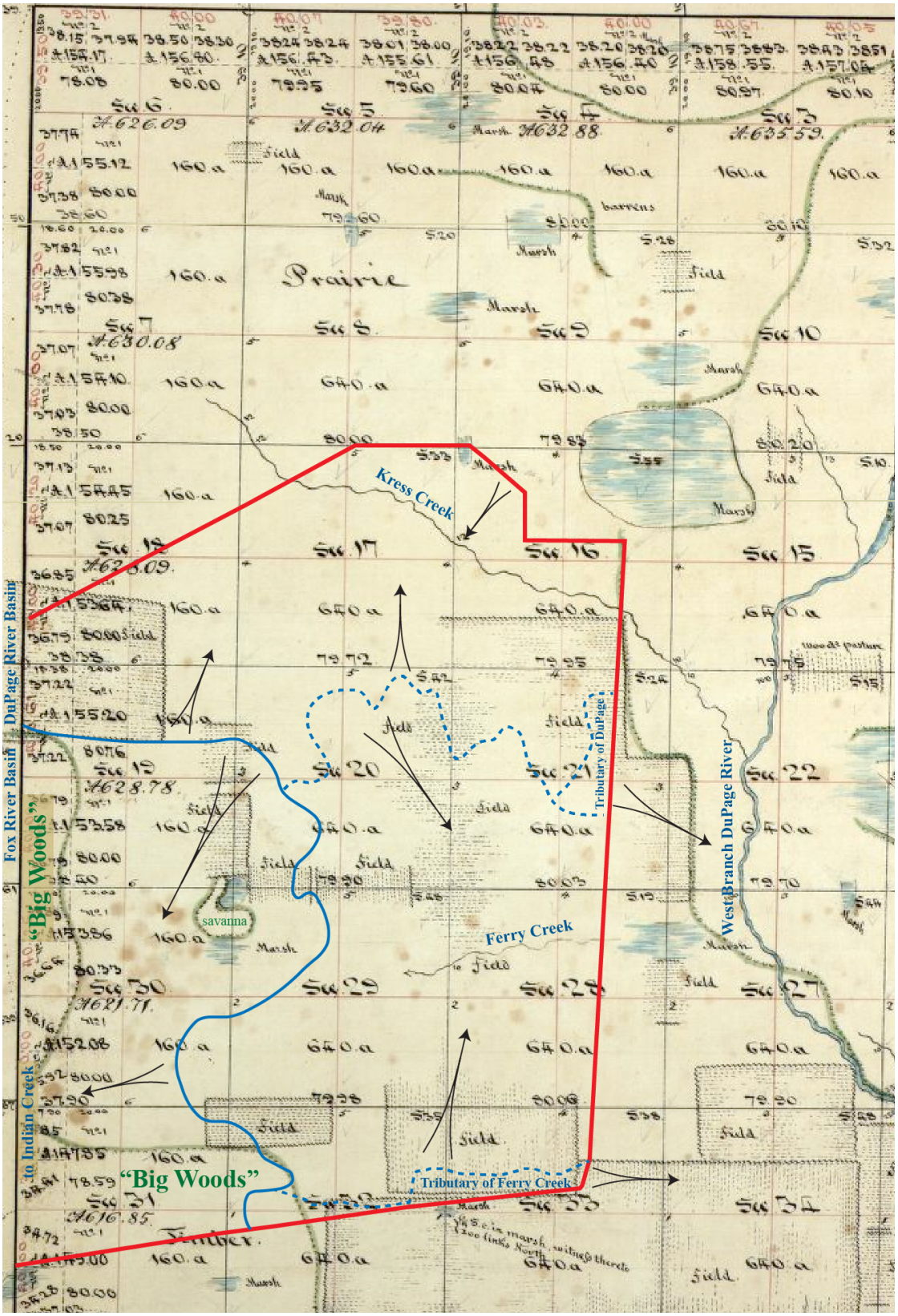


Figure 3. GLO plat of Winfield Township dated 1842 with an overlay showing the surface water drainage divides (blue) and the Fermilab boundaries (red).

Both the Landon and Kempton map (see Figure 1) and the GLO plats (dated 1840-42) note poorly drained areas near the headwaters of some of the tributaries (*e.g.,* Indian Creek, the unnamed tributary of the West Branch, and the northernmost branch of Ferry Creek that extends into Fermilab property. In addition, the 1840 GLO plat for Batavia Township maps a "marsh" in Section 36 that crosses the county line although the plat does not delineate Indian Creek. The plat does include Mahoney Creek entering the Fox River in Section 27 (see Figure 2). The 1842 plat for Winfield Township depicts significant numbers of "marsh" lands north of Kress Creek and east of the West Branch of the DuPage River, outside of the Fermilab property (see Figure 3). Within Fermilab, marsh is limited to a small savanna at the corner of Sections 19, 20, 29, and 30. The plat illustrates both Kress Creek and the main branch of Ferry Creek only. The poorly drained marsh areas are wholly confined to the groundmoraine landform within Fermilab. While some marsh areas may remain along Indian Creek and near the savanna, the Ferry Creek marsh now holds Lake Law, the A. E. Sea, and DUSAF Pond. I get confused between the areas labeled as drainages and where the actual creeks are.

**Development of Soils**

Pedogenesis or soil formation follows the actions of particular factors on parent material: climate (particularly temperature and precipitation), organisms (*e.g.,* earthworms, burrowing rodents, and humans chemically altering and physically mixing soils), landscape relief (especially slope and sun exposure), and the passage of time (*i.e.,* weathering). Parent material across Fermilab included loess, alluvium, till, and drift. Soil Association units mapped within the facility include Morley-Beecher in Batavia Township and Morley-Ashkum and Drummer-Mundelein-Barrington in Winfield Township (Table 1).

Table 1. Summary information for the soil units mapped within Fermilab.

| Soil Association Unit | Relief | Drainage quality | Parent material |
|---|---|---|---|
| Morley-Beecher | Level-rolling | Well-somewhat poor | Loess and till |
| Morley-Ashkum | Level-rolling | Well-poor | Till |
| Drummer-Mundelein-Barrington | Nearly level | Moderately well-poor | Outwash |

The Morley-Beecher unit formed under timbered landscapes with the Morley soil series representing mesic conditions and Beecher representing wet conditions within the landscape (Big Woods). Morley series soils consist of moderately well drained soils formed in loess and the underlying dense till parent material on till plain and morainal

slopes. Beecher series soils consist of somewhat poorly drained soils formed in silty material and silty clay loam or clay loam glacial till parent material on till plains.

The Morley-Ashkum unit formed under timbered landscapes with wet prairie openings on nearly level to gently undulating till plains. The Ashkum series soils consist of poorly drained soils that formed in colluvial sediments and in the underlying silty clay loam till.

The Drummer-Mundelein-Barrington unit formed under mesic prairie (Mundelein and Barrington) and wet prairie (Drummer) landscapes on nearly level outwash and till plains as well as in kettle depressions. The Drummer series soils consist of poorly drained soils formed in loess or other silty material and in the underlying loamy stratified outwash on nearly level or depressional parts of outwash plains and till plains. The Mundelein series soils consist somewhat poorly drained soils formed in loess and the underlying stratified loamy outwash on outwash plains. The Barrington series soils consist of moderately well drained soils formed in loess or water-laid silty material and the underlying stratified loamy outwash on level to gently sloping outwash plains.

**Fundament Vegetation and the Paleoclimate Record**

The plats and notes created by the General Land Office surveyors provide useful information concerning the pre-settlement or fundament vegetation of the Fermilab property (see Figures 2 and 3). Climatically sensitive fossils, such as pollen grains, snails, and ostracodes, retrieved from nearby lake sediments provide data to reconstruct the more ancient paleo-environments of northeastern Illinois.

*Fundament Vegetation*

The GLO plats provide an illustrative depiction of the location and extent of timber, prairie, and water systems (including rivers, creeks, lakes, and marshes). The GLO notes provide descriptions of witness trees along section lines, assess the suitability of the landscape for agriculture, and record the width, velocity, and flow direction for the various water courses. James Thompson (1789-1872) and his son John Porter Thompson surveyed Batavia Township during the fall of 1839 under a contract signed 21 September 1839. Jas. Thompson surveyed the public domain lands for twenty years, appointed in 1821 (J. L. McDonough 1883:73). William Lee Davidison Ewing (1795-1846), who served as a land office receiver (appointed 1820), governor of Illinois for two weeks in 1834, and a land claims commissioner in Dakota Territory (1837), surveyed the north, east, south, and interior lines of Winfield Township during the spring of 1840 under a contract signed 23 September 1839.

Researchers, such as Robbin Moran (1980), utilize the GLO data to reconstruct the fundament vegetation of particular regions. He concluded that oak trees (bur oak, black oak, and white oak) dominated the arboreal communities (forest and savanna) in Kane and DuPage counties with forest communities on the fire-protected or west side of the Fox River, savanna communities in areas of rugged topography, and prairie communities occupying the flat to gently rolling landscapes (Moran 1980:iii). The data confirm that the timber outlined in the western portion of Fermilab comprises forest, known locally as the Big Woods (Moran 1980:10). Moran interprets the grove of timber at the corner of Sections 19, 29, and 30 comprises savanna, a less dense community of trees. White oak and "uncommon and mesic" witness trees in the Kane County portion outnumbered bur oak and black oak witness trees within the Big Woods (Moran 1980:36-38). Bur oak, black oak, and "uncommon and mesic" witness trees in the DuPage County portion outnumbered white oak witness trees within the Big Woods (Moran 1980:39-41). The savanna's witness trees were limited to bur oak and black oak.

Detailed review of the plats and notes for that part Batavia Township within Fermilab indicates that the Big Woods extends into Sections 24, 25, and 36 with prairie covering Section 13. According to the field notes, the Big Woods comprised white, red, black, and bur oak primarily with an understory of hazel,[2] briars, and vines. Less dominant tree species included ash, lynn, cottonwood, walnut, ironwood, silver maple, sugar maple, hickory, redbud, and elm. The "Road to Warrenville" follows along the prairie-timber ecotone. The Thompsons mapped a small marsh straddling the township line in Section 36. Water from the marsh drained west-southwest toward the Fox River and probably formed the headwaters of Indian Creek. West of the Fox River in Batavia Township, the Thompsons noted rolling prairie and oak savannas (black, bur, and white oaks).

Detailed review of the plats and notes for that part of Winfield Township within Fermilab indicates that this area includes a mosaic of patchy resources—forest edge (Big Woods), narrow timber-lined streams, savanna, prairie with scattered trees, wet prairie, and marshes. The surveyor Wm. L. D. Ewing mapped white, red, and bur oaks (hazel understory) along the West Branch of the DuPage River. Within 3.0 km (west) of the West Branch, the surveyor noted expansive prairie with scattered oak savannas (hickory and hazel understory) and marsh interspersed. Running through Sections 28 and 29, where the AE Sea is today, Ewing noted a brook flowing west-southwest from a marsh. Other marshes within Winfield Township and within or near Fermilab included a large marsh at the intersection of Sections 9, 10, 15, and 16, a marsh and small grove (oak

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[2] Probably common witch hazel, *(Hamamelis virginiana)* not American hazelnut (*Corylus americana*). Witch hazel is most abundantly found in the understory of well-shaded forests of the Eastern and Midwestern United States, such as the Big Woods. American hazelnut is native to sunny habitats in Eastern North American.

savanna with hazel understory) in Sections 19, 20, 29, and 30), and a small marsh straddling Sections 31 and 32. Ewing described the land within Sections 2, 3, 10, 11, 15 as grading from marsh to wet prairie "too wet for cultivation." Sections 18, 19, 21, 27, 30, 31, and 32 encompass timber-prairie boundaries or ecotones.

*Paleoclimate Fossil Record*

Pollen and other fossil studies provide important proxy records for paleoclimate. Interpretation of the pollen requires organic-rich, layered records commonly preserved in rhythmically bedded lake sediments (to establish time series) with good geochronology and correspondence to climatic events. Climatically sensitive microfossils, such as ostracodes, provide paleoclimatic data concerning the depth, temperature, and chemistry of the water in which the fossils thrived (Curry *et al* 2010:252-253). Plant macrofossils (such as seeds, needles, rootlets) and pollen grains preserved in the lake sediments allow for the climatic reconstruction of local environments through time. Locally studied records include samples of lake sediments collected from kettle basins—the 228-acre Crystal Lake in McHenry County (27 mi. or 43.2 km north-northwest from Fermilab) and the 100-acre Nelson Lake in Kane County, Illinois (5 mi. or 8.0 km due west from Fermilab) (Gonzales and Grimm 2009, Curry and Yansa 2004, Curry, Grimley, and Stravers 1999). Curry and Yansa (2004:319) report over 500 ice-walled lake deposits across northeastern Illinois with each one examined thus far yielding plant macrofossils useful for paleoclimatic reconstruction.

Gonzales and Grimm (2009:242-243) report that vegetation changes at Crystal Lake lagged the major climate changes evident in the Greenland ice cores by 300 to 400 years, perhaps influenced by the proximity and height of the glacial ice especially when the ice margin filled the basin of Lake Michigan.

Human occupation within Fermilab began during the postglacial climatic regime when deciduous forests replaced dense boreal forests with forests eventually dominated by oak species (Table 2). The Nelson Lake data suggest mostly open forest-tundra with scattered trees or clumps of spruce in open tundra from about 15,000 to 13,500 YBP during the late glacial Sedge Phase (Curry *et al* 1999:11-12). The late glacial Spruce Phase, represented by a high percentage of spruce, a moderate percentage of larch, and some black ash, marked the closed spruce-ash boreal forest near Nelson Lake from about 13,500 to 10,000 YBP. A transitional phase (about 10,000 to 9,000 YBP) followed an abruptly warmer climate regime in which spruce percentages declined and percentages of fir, balsam poplar, black ash, birch, and alder increased. The growth of mesic, deciduous forests followed in the postglacial Deciduous Phase (about 9,000 to 5,500 YBP) with significant percentages of ironwood, elm, oak, hickory, and sugar maple as well as increasing quantities of grass and ragweed in the developing upland prairie openings near

Nelson Lake. Development and expansion of prairie communities, with the maximum percentages of sage at Nelson Lake, followed during the postglacial Dry Phase from about 5,500 to 3,000 YBP. The evidence for drying at Nelson Lake, especially, the severity, differs somewhat from evidence elsewhere in the state. King's (1981:56) analysis of the pollen from Chatsworth Bog (90 mi. or 144 km south of Fermilab) demonstrated an expansion and dominance of prairie in central Illinois during the same period (see also Table 2). Nelson Lake filled with peat during the postglacial Grass Phase from about 3,000 to 170 YBP. Pollen indicates significant percentages of aquatic grasses, such as wild rice and common reed, within the Nelson Lake sample. The Little Ice Age provided modest cooling with colder winters for about 300 years during the "modern" climatic regime although Curry *et al* (1999) do not mention any paleoclimatic correlates for this at Nelson Lake. In contrast, King's (1981:51) analysis of the pollen from Volo Bog (42 mi. or 67.2 km north of Fermilab) demonstrated a return of cool, moisture-loving flora during the Little Ice Age. The high percentage of ragweed pollen in the Nelson Lake sediments during the postglacial Settlement Phase (170 YBP to present) marks the settlement of Euro-Americans in the area.

Table 2. Illinois archaeological and paleoclimatic correlates (after Curry *et al* 2010:253).

| **Archaeological Correlates** | | **Paleoclimatic Correlates** | | |
|---|---|---|---|---|
| *Archaeological Period* | *Years (BP)* | *Paleoclimate (YBP)* | *Climate* | *Vegetation* |
| | | 15,900-14,700 | Postglacial | Dense boreal forest |
| | | 14,700-11,800 | Postglacial | Mixed boreal-deciduous forests |
| | | 11,800 | *Abruptly warmer* | Spruce driven from region |
| Paleoindian | 12,000-9,000 | 11,800-9,500 | Moist & warm | Growth of forests dominated by deciduous oak, black ash, and elm |
| *Early Archaic | 9,000-8,000 | 9,500-6,300 | Somewhat drier | Prairie develops; elm and ash importance diminishes |
| *Middle Archaic | 8,000-5,000 | 6,300-4,000 | Drier than present | Maximum prairie development |
| *Late Archaic | 5,000-2,500 | 4,000-present | Modern | |
| Woodland | 2,500-950 | | Modern | |
| Mississippian | 950-300 | 400-100 | Little Ice Age | Modest cooling with colder winters |
| Proto-historic | 300-110 | 400-100 | Little Ice Age | Modest cooling with colder winters |
| Euro-American | 110-present | | Modern | |

*Indicates sub-period of the Archaic Period.

## Anthropogenic Alterations

While organisms act upon parent material in soil creation and modification and fauna disperse seeds and modify hydrology, among other actions, human interaction with the

physical landscape produced significant alterations. Human changes to the physical landscape include those produced by Native Americans initially and by Euro-American settlers subsequently. Alterations enacted by Native Americans included burning, tilling pruning, selective harvesting, sowing, weeding, transplanting, and other manipulation of the floral, faunal, and hydrologic resources and habitats. These purposeful and discriminate management techniques enhanced productivity but may also have adversely impacted the landscape. Utilizing a geoarchaeological approach within a regional framework, geologist Gary Stinchcomb and his colleagues (Stinchcomb *et al* 2011, 2012) demonstrated the that agricultural practices enacted by late prehistoric groups within the middle Delaware River basin increased soil erosion and sedimentation in the valley bottoms to a much greater extent than previously thought. The alterations related to agricultural practices impacted the Archaic and Early Woodland landscape at Fermilab to a lesser extent since sites from these periods were pre-agricultural, smaller, seasonal sites. Moran (1980:58-62) discussed the relationships among fire, vegetation type, topography, and hydrology within northeastern Illinois. While purposeful and unintentional burning by Native Americans occurred, empirical evidence suggests that such activity remains speculative for most places and times (Barrett, Swetnam, and Baker 2005:33).

Subsequent modifications wrought by Euro-American settlers within Fermilab specifically have included 1) the impact of the initial Euro-American settlement as apparent on the GLO plats, 2) changes wrought by the agricultural development of the parcel, and finally 3) the impact to the landscape with Fermilab's mission.

First, Figures 2 and 3 illustrate a number of the earliest human alterations to the naturally developing physical landscape. Within the Fermiilab property, James and John Thompson have delineated the "road to Warrenville" that parallels the northern edge of the Big Woods through Sections 23 and 24 of Batavia Township. Other roads appear elsewhere in the two townships. Newly built structures include a bridge over the Fox River to carry the "road to Warrenville" and a dam for "Boardman's mill" further upstream. The Batavia Township plat shows extensive cultivated fields within the prairie expanse that borders the Big Woods and the "road to Warrenville" in Sections 13 and 14 of Batavia Township and in the adjacent sections of 18 and 19 in Winfield Township. Andrew Spear pre-empted the Batavia Township parcel in 1834. Milo M. Kemp, David McKee, James N. Wilson, Ira Woodman, and Timothy D. Woodward held pre-emption land patents for parcels with additional cultivated fields in Winfield Township (Bird 2013d). In addition to converting the prairie lands to agriculture, the settlers harvested timber resources to construct cabins (logs, planks, and split shingles).

Secondly, as settlement intensified so did the human alterations to the landscape through the construction of roads across the study parcel; the construction of residences

and outbuildings and excavation of wells on the farms therein; the expansion of farming activities throughout the parcel; and the installation of drain tiles within the farm fields. These activities affected the drainage patterns of surface water, changed the water table level, and increased erosion and siltation processes, among other alterations.

Lastly, comparison of the Fox-DuPage drainage divide drafted prior to construction of the Fermilab facilities (see Figure 1) with the current drainage divide demonstrates that construction has moved the divide further west to include the Tevatron ring at Fermilab within the DuPage River basin (CBBEL 2006). Fermilab has excavated some of the marshes to create open water such as the A. E. Sea, Lake Law DUSAF Pond, and Lake Logo. Restored and/or remnant landscapes within Fermilab include the Prairie and Savanna within the Tevatron ring, the Main Injector Wetlands, and the 75-acre Pine Street Restored Prairie and Native Woodland ecosystem.

**Settlement Systems and Choices**

Resource zones at the time of Euro-American settlement as inferred from the GLO data included Oak Savanna (mesic upland), mesic Oak Forest, Prairie (wet and mesic), and Aquatic (creeks and marshes) zones. Plant resources (food, fuel, tools, crafts, medicine) may include tree nuts, bark, sap, and lumber, various grasses (stems, leaves, seeds, roots, and tubers), and shrubs such as witch hazel, among other resources and applications. OAK SAVANNA, typically called “scattered” or “scattering” timber in surveyors' notes, dominated the fundament vegetation along the edge of the Prairie Peninsula (Transeau 1935, King 1981, Kilburn 1955 and 1959, Vestal 1931). Forest communities tend to produce more potential food plant species that prairie or aquatic communities with resource edges producing a greater variety of food choices. Fauna associated with the Oak Savanna resource zone included large mammals (especially white-tail deer) and a variety of small mammals (including squirrel, fox, and raccoon) utilized for food, fur, and crafts. A number of birds, most notably passenger pigeons, would also be available. Deer, in particular, would be attracted to the browse made available by the nut-producing trees.

The MESIC OAK FOREST of the Big Woods produced nuts (oak acorns, hickory nuts, and walnuts), fruit (cherry, blackberry, raspberry, and grape), and sap (sugar maple). Additional plant resources associated with mesic forests often include black walnut, hawthorn, mayapple, and blueberry. Plants such as the berries and grape would have been located in disturbed areas, along the forest edge, or in prairie openings. Like the oak savanna, fauna associated with such mesic forest communities include deer and a variety of small mammals including rabbits. A number of birds, most notably passerines, would also be available

PRAIRIE communities lack unique food resources. Native Americans utilized a number of herbaceous prairie plants including ragweed, goosefoot, sunflower, Jerusalem artichoke, amaranth, and sumpweed, as well as a variety of grasses, many of which are disturbed earth or pioneer plants. The surveyors' notes rarely mention herbaceous plants other than rosin, sunflower, and red root. Other plants within the Prairie plant communities of Illinois included big bluestem, Indian grass, cordgrass, and prairie drop seed. Fauna associated with the grasslands are most notably deer, bison, elk, coyote, and rabbit. Bison appeared late in the eastern portion of the Prairie Peninsula.

Among AQUATIC communities, marshes produced a number of potential plant food resources especially during the winter and spring with aggregated and easily harvested resources. The GLO surveyors noted Bulrush (tubers and crafts) within the marshes. Not noted, but present in the study parcel, would have been duck potato, American lotus (tubers), cattail (crafts and food), and wild rice (food). The rivers and creeks, although not as productive as marshes, provided significant amounts of food. The diverse fauna associated with marsh edges and river included deer, raccoon, beaver, muskrat, a number of turtle species, and many species of duck as well as egrets and fish (perch, bullhead, and catfish, sunfish, small mouth bass, drum, gar, and pike) with some resources available only seasonally. The creeks and rivers also produced a number of fresh water mussels.

In summary, the resource communities within the study parcel are varied and discontinuous across the landscape. The prairie-timber ecotone and the upland marshes provided focal points of settlement and resource extraction loci for the hunter-gathers to the near exclusion of open prairie (mesic and wet) loci; therefore, Native American settlement should be patterned accordingly and not randomly distributed. Jeske (1987) predicted that given the physical landscape, sites within Fermilab should be limited to seasonally occupied short-term extractive camps. Given that the physical landscape changed through the seasons and over time as the glacial ice retreated and the temperatures warmed, the inhabitants developed strategies to successfully exploit the available food, fuel, tool, craft, and medicinal resources. Social considerations also affected habitation location, group size, density of settlement, and movement through the landscape. Although both Native American groups and Euro-American settlers chose habitation locations based on key aspects of the physical environment, especially access to potable water and timber resources, settlement patterns varied. Additionally, technological considerations attracted Euro-American settlers to fordable rivers with waterpower potential for mills and to rich soil amenable to subsistence and commercial agricultural.

# Appendix C:
Cultural Landscape

M. Catherine Bird and Rochelle Lurie

Although people probably entered North America from Asia at least 20,000 years ago, solid evidence for their presence in the Midwest before 12,000 B.P. is elusive. From the time of the initial entrada until the arrival of the Europeans in the seventeenth century, the archaeological record shows evidence for continuous population growth and changing social adaptations to new developments in both the natural and social landscape.

The following sketch of the cultural landscape within the Upper Illinois drainage serves as a framework for assessing the significance of the archaeological sites within Fermilab. This sketch is based on information from sites that have been recorded with the State of Illinois; however, recorded sites represent only a small percentage of the prehistoric cultural resources within the drainage. Significant numbers of sites have been found by avocational archaeologists or relic collectors but have not been reported while others remain undiscovered on unsurveyed land.

## Paleoindian Period (12,000 to 9,000 B.P.)

During the Paleoindian Period highly mobile and wide-ranging groups of Paleoindian hunter-gatherers traversed the Midwest. Paleoindians hunted and processed a variety of animals including the now extinct mammoth and mastodon, elk and caribou, and gathered locally available plants. Archaeologists occasionally recover the stone tools most often associated with this period, fluted projectile points and/or knives, in upland areas and along the margins of large river valleys and ancient lake beds. Side-scrapers, end scrapers, graves, *pieces esquille,* bifaces other than finishes projectile points, and retouched flakes are also present in the tool assemblages (Loebel 2005:175-176, Loebel 2009:230-241). Loebel documents the distribution of different raw material types suggesting broad patterns of long-distance transport and territorial migrations by Paleoindian groups. Several of these migration routes overlap and Loebel suggests that such overlapping areas (such as at Starved Rock in northern Illinois) are places where different groups met to exchange goods and information, and meet perspective mates (Loebel 2005:xxix).

Very little is known regarding the actual distribution, subsistence pattern, and social organization of the Paleoindians although Loebel (2005) has explored the larger regional pattern of raw material distribution and landscape utilization. Research into the poorly defined Chesrow Complex in far southeastern Wisconsin links the use of mammoth with a pre-Clovis occupation of southeastern Wisconsin (Overstreet 1993). Radiocarbon dates from bone collagen from the Hebior and Schaefer wooly mammoths range between

12,200 and 13,510 years before present (Overstreet and Kolb 2003). There is, however, little evidence for the hunting of these animals; they may have been scavenged after death. No temporally diagnostic tools have been recovered in association with the remains, and the taphonomic integrity of some mammoth sites is questioned (Mason 1997:97). Loebel also questions the need for proposing a Chesrow Complex. He posits that the presence of Gainey fluted points (the earliest expression of Clovis in the Great Lakes region) in southern Wisconsin and that the Gainey Complex itself may be associated with these megafauna (Loebel 2005: 21-24).

While archaeologists propose the use of megafauna and herd animals during the early Paleoindian Period, with the amelioration of the climate and the establishment of deciduous forest faunal exploitation became more like what archaeologists find at Early Archaic sites. Evidence for subsistence in the late Paleoindian Period is more substantial. Kuehn and Clark (2012) document the use of fauna at three late Paleoindian sites in East-Central Wisconsin. Fauna at these sites "reflect a generalized adaptive strategy in which a relatively wide variety of taxa were utilized…the composition of the assemblages indicates exploitation of forest-edge, wetland, and aquatic animal resources.''(Kuehn and Clark 2012:148).

Limited data exists for ritual behavior among Paleoindian groups. The Renier Ceremonial Complex was defined on the basis of heat-fractured artifacts (often finely made and unused projectile points made from exotic materials) at Late Paleoindian sites in Wisconsin. Archaeologists associate this treatment of artifacts with ceremonial activity, possibly burial rites. The DeWulf site in northwestern Illinois appears to a component of this complex based on the intentional destruction of items made from exotic raw materials, the transportation of previously manufactured items with no evidence of use to an isolated place on the landscape, and the absence of evidence for everyday activities (Loebel and Hill 2012:3-7).

Within recent years three sites dating to this transitional period have been investigated in the Upper Illinois drainage. Fluted points and preforms along with other tools typical of Paleoindian technology (*i.e.*, spurred endscrapers) have been recovered from Hawk's Nest (11-L-344), a Gainey Complex (11,200-10,800 B.P.) plow zone site discovered on the edge of a former wetland in Lake County (Loebel, Amick, and Lurie 2000; Loebel 2005). Hawk's Nest is one of the few extensively studied Paleoindian sites in Illinois. Repeated surface collections and limited excavations at the site yielded close to 200 chipped stone tools, including fluted point preforms, end and side-scrapers, and gravers along with stone tool manufacturing debris. Some of these tools and debris were made from raw materials obtained up to 560 km away. The size of the assemblage and its distinctive contents suggest that the site was repeatedly used as a transient camp during

extended hunting forays (perhaps seasonal) within the Upper Illinois and Lake Michigan basins (Amick, Loebel, Lurie, and Van Nest 2000).

The Garrison Site (11-L-337), situated on Lake Border Moraine till along a linear slough now carrying the North Branch of the Chicago River, contained an ephemeral late Paleoindian component that had not been disturbed by plowing. Phase II testing and Phase III data recovery at Garrison over three field seasons yielded a small number of tools and debris that could be assigned with some confidence to this early period (Lurie *et al.* 1993, Demel 2000). The site was reoccupied many times during prehistory most likely because of the wetland and forest resources within the vicinity.

Archaeologists from Northwestern University recovered late Paleoindian/Early Archaic artifacts while investigating a Langford Tradition Upper Mississippian burial mound (Plenemuk Mound, 11-Wi-241). Archaeologists discovered the Paleoindian/Early Archaic artifacts, likely the remnants of a seasonally occupied base camp, along a high terrace above the Kankakee River (Doershuk 1988:143). Late prehistoric people disturbed these earlier remains while constructing the burial mound.

Many archaeological sites in the Upper Illinois drainage dating to the Paleoindian Period have been either destroyed by erosional processes (exacerbated by plowing) or buried by natural deposition. Within Fermilab only the Trust site (11-Du-157) yielded tools typical of a late Paleoindian Period/Early Archaic occupation (a spurred end scraper, and a Dalton point). This site was also reoccupied during the succeeding Archaic periods. The Trust site is not eligible for inclusion on the NRHP.

**Archaic Period (9,000 to 2,500 B.P.)**

Archaeologists recognize the long Archaic Period as a time of transition in the Midwest. After the final retreat of the glaciers, subsistence pursuits adjusted to the changing natural environment as deciduous forests replaced coniferous forests and the prairie expanded eastwardly. Settlements and extraction camps focused on upland marshes and small streams to the exclusion of larger streams and wet prairies. Human population densities gradually increased, mobility decreased, resource exploitation and technology became more diverse and localized, and social organization became more complex (Brown and Vierra 1983:188-189). In northern Illinois, archaeologists identify a prolonged, uninterrupted evolution in projectile point styles and suggest the presence of highly conservative cultural groups in the region (Lurie, Kullen, and Demel 2009).

During the Archaic Period, hunting began to focus on deer as the primary source of meat. Archaic groups also collected a variety of smaller animals, fish, and shellfish with an increased emphasis on aquatic resources throughout the period. Plant foods including

tubers, nuts, and seeds became increasingly important subsistence items. While hunting remained important, archaeologists note an increase in nut processing beginning during the Middle Archaic-Late Archaic transition (Brown and Vierra 1983: 188-189, Lurie, Kullen, and Demel 2009:780). Archaic groups may have domesticated some native plants, such as goosefoot, sumpweed, and possibly native squash or gourd, during the latter part of the Archaic. Domesticated dog has been identified archaeologically at the Koster site in Horizon 11, an Early Archaic component approximately 8,500 years ago. Three dogs were found in shallow pits only large enough to hold their remains (Struever and Holt 1979). "The evidence from the Koster site hints that an affectionate relationship between human and dogs may have existed over 8,000 years ago in the North American Midwest" (as quoted in Morey 2010:157).

New tool types were developed including new forms of spear or projectile points (with corner-notched, side-notched, and stemmed hafting elements), the chipped stone adze, groundstone tools, copper tools, stone mortars and pestles for processing plants, and ornaments from bone, shell, and copper. The first cemeteries in Illinois appear during the Middle Archaic and late in this period low mounds of earth occasionally covered graves. Toward the end of the Archaic Period, groups had established particular territories within which settlements shifted seasonally to exploit the available natural resources. Networks for the exchange of resources, within and between regions, developed by the end of the Archaic.

Although there are many archaeological sites which date within the long Archaic Period, few have been extensively excavated in the Upper Illinois drainage and until recently very little was known about the nature of subsistence practices, social organization, or the processes of cultural change and stability during the Archaic.

Site 11-Du-203 at Argonne National Laboratory is a small late Middle Archaic site occupying less than an acre of wooded, upland terrain adjacent to wetlands. Argonne staff archaeologists excavated portions of the site in 1987 and 1988. Elias and Greby (1990:67) noted distinct clusters of bifacial tools and chipping debris sometimes in association with fire-cracked rock. The artifact associations in two of these clusters provide strong evidence for two general zones of activity: hearth-side activities, including stone tool manufacture and some plant and animal processing, and food preparation activities, respectively.

MARS excavated McGraw Farm (11-L-386), an Archaic and Woodland mortuary and habitation site located on a prominent glacial kame overlooking the Fox River, in 1996 (Porubcan and Lurie 1998). Five Middle Archaic to late Middle Archaic burials (dated 4,640 to 4,740 B.P.) exhibited a variety of mortuary treatments including primary

inhumation, cremation, and bundle reburial. Burial treatment type was not dependent on age and/or sex lending credence to the belief that Archaic society was egalitarian. Burial location and treatment was probably determined by the distance to a family burial ground and by season of the year rather than individual status. The site was found in a plowed field with no remaining evidence for a burial mound.

MARS tested and mitigated the Chen site (11-Wi-2514), an unplowed Late Archaic Period site located on a north-facing bluff slope above the DuPage River (Lurie, Loebel, Pfannkuche, and Tolmie 2002; Higgs, Lurie, and Johnson n.d., Lurie, Kullen, and Demel 2009:780). The site yielded over 17,700 artifacts as well as 79 chipped stone tools including Matanzas, Brewerton Side Notched, and Motley points. Microwear analysis of the tools suggests a number of domestic and subsistence activities occurred at the site. Geomorphological investigations confirmed the undisturbed nature of the deposits; however, the site did not contain preserved flora or fauna. Site location and analysis of chipped stone tools and debris suggest that the Chen site probably functioned as a spring, summer, and/or fall habitation with activities linked to resource extraction from the nearby DuPage River floodplain and upland margin areas.

MARS obtained a calibrated radiocarbon assay of 5,312 B.P. from nutshell recovered in association with an Archaic Period Matanzas point from a pit feature at the Garrison site (see above). The types and amounts of artifacts collected in the vicinity of this pit suggest that during the late Middle Archaic the site was used as a short-term camp occupied perhaps by an extended family. Floral and faunal analyses suggest a late summer through fall and possibly winter occupation of the site with a focus on plant and/or nut processing (Demel 2000:403).

Within Fermilab 22 sites (11-Du-35, 11-Du-36, 11-Du-38, 11-Du-40, 11-Du-41, 11-Du-156, 11-Du-157, 11-Du-158, 11-Du-159, 11-Du-163, 11-Du-225, 11-K-17, 11-K-20, 11-K-22, 11-K-23, 11-K-24, 11-K-203, 11-K-204, 11-K-206, 11-K-207, 11-K-261, and 11-K-1255) contain tools diagnostic of an Archaic Period occupation (*i.e.,* non-specific Archaic, Early Archaic, Middle Archaic, and/or Late Archaic periods). Most frequently these points are small to medium in size with shallow side notches similar to the Matanzas points found at McGraw, Garrison, and 11-Du-203 at Argonne. The Gazebo site (11-Du-38) at Fermilab contains a substantial Middle Archaic Period occupation and is in a setting very similar to 11-Du-203 and Garrison. A focus on wetland resources appears to be a characteristic of Middle to Late Archaic sites in the region particularly in the uplands away from the main river channel. Gazebo (11-Du-38) is eligible for inclusion on the NRHP. MARS recommended Phase II testing for 11-Du-37, 11-Du-40, 11-Du-156, 11-Du-158, 11-Du-163, 11-Du-225, and 11-K-17.

**Woodland Period (2,500 to 950 B.P.)**

Archaeologists traditionally demarcate the onset of the Woodland with the introduction of pottery technology. However, in the southern Midwest, pottery appears on sites dated as early as 4,500 B.P., well within the Late Archaic. Late Archaic/Early Woodland pottery, such as Black Sand and Marion, tends to be thick and porous with fiber or coarse grit temper. The available data from the few Early Woodland sites that have been studied suggest that both of these ceramic types are present in the Upper Illinois drainage. Additionally, Early Woodland sites contain particular forms of projectile points (notably those with relatively broad blades and stemmed hafting elements) and include the construction of substantial earthen burial mounds.

Early Woodland patterns of settlement, subsistence, and social organization probably differed little from those of the Late Archaic. Hunting and fishing remained focal subsistence activities. While nuts continued to be an important plant food item, seeds played an increasingly important role although plant cultivation did not account for the bulk of subsistence calories. Sunflower may have been added to the list of domesticated plants at this time. Data from the Lower Illinois River Valley and the Mississippi River in Illinois suggest that Early Woodland groups focused on river bottom resources during at least part of the year. A shell midden at the Macktown site (11-Wo-256) in Winnebago County provides evidence for the Late Archaic/Early Woodland exploitation of shellfish at the confluence of the Rock and Pecatonica Rivers. Site deposits record a dense and complex pattern of repeated occupations blurred by cultural and natural disturbances (Pfannkuche 2007, Jacobs and Amick 2003, Amick 2000, Amick and Pfannkuche 1999, Porubcan *et al* 1998).

During the Middle Woodland Period, settlements in the Midwest tended to concentrate along broad river valleys. Woodland groups placed burials in mounds on nearby bluffs, possibly serving as territorial markers. Sites were occupied for longer periods of time during the year and by greater numbers of people than in preceding periods. Subsistence activities focused on harvesting the abundant seed plants of the floodplain as well as on raising some native domesticates. Deer, fish, and a variety of small mammals and birds were also important food resources.

Significant data on Middle Woodland come from the region of the Ohio, Mississippi, and Illinois Rivers in Ohio and Illinois. Along the lower Illinois River, Middle Woodland settlement systems consisted of a number of functionally differentiated site types including regional centers, base camps, small seasonal camps, and mortuary sites. Exotic and stylized artifacts called Hopewell have been found in both mortuary and habitation contexts throughout the Midwest during the period and suggest a widespread social and economic network. Some arms of the network stretched as far west as the

Rocky Mountains, north to Lake Superior, south to the Gulf of Mexico, and east to the southern Appalachians. Archaeologists recognize Middle Woodland sites by the diagnostic pottery vessel decoration, projectile point types, exotic artifacts, large burial mounds (with central burial chambers for important individuals or families), complexes of earthworks and other remains. Weaver ceramics in association with Steuben points, both of which are diagnostic of the transition from Middle Woodland to Late Woodland (Wolforth 1995), have been recovered from two, radiocarbon-dated sites in the Upper Illinois drainage (11-Wi-684 and 11-Mh-125) excavated by Kullen (1995) and Lurie and Johnson (1996), respectively.

During the late Middle Woodland and early Late Woodland, trade of long distance materials came to an end, and mortuary activities and settlement patterns changed. There appears to have been a radical reorganization of social and economic systems in the Midwest, the impetus for which is currently unclear. Throughout the region, Late Woodland appears to have been a period of population growth and expansion with settlements no longer restricted to broad alluvial river valleys. Late Woodland sites can be recognized by thin-walled, harder, grit-tempered ceramics and new projectile point types, including true arrow points. Late Woodland sites are found in a variety of topographic settings, sometimes in the same locations as earlier Archaic sites. The hierarchy of sites present during the Middle Woodland disappeared and Late Woodland settlement systems apparently consisted of small seasonal villages, burial mounds (in which large numbers of individuals are interred throughout), and associated support camps.

Some Late Woodland people in southern and central Wisconsin, eastern Minnesota, eastern Iowa, and northern Illinois carried on the Middle Woodland tradition of constructing burial mounds (often in the form of animal effigies) and earthworks for burial ceremonial purposes. The Effigy Mound ceremonial, though, differed from Hopewell in being more regional in scope and may have helped to "bring together Late Woodland local groups in the upper Mississippi River Valley to form a large new social confederation" (Birmingham and Eisenberg 2000:109). These mounds and earthworks, usually only a few feet high but sometimes very large areal extent, are often found in groups containing effigy, conical, and linear mounds. Effigies appear to mirror a tripartite division of the mound builders' world: the upper world represented by bird forms; the aquatic lower world represented by water spirits usually described as panthers, turtles, or lizards; and the terrestrial lower world represented by bears, canine-like, and antlered animals (Birmingham and Eisenberg 2000). In her 1984 master's thesis on effigy mounds Carol Boris (1984) identified 17 earthwork locations in Kane County primarily from the nineteenth century field notes compiled by T. H. Lewis. None of these earthworks has survived.

Although corn horticulture began to be increasingly important in the subsistence of Late Woodland people in southern and central Illinois, evidence from three sites in northern Illinois suggests that hunting, fishing, gathering wild plants, and perhaps cultivating some native seed plants continued to provide the bulk of food items (Jeske 1992). Corn appears to have been a supplement in the diet regime and may have been important as a storable winter food resource (Markman 1991). Site size and dependence on wild food sources suggests that Late Woodland populations in northern Illinois were smaller and perhaps less socially complex as their counterpoints in the rest of the state.

Some aspects of the Late Woodland lifeway in northern Illinois are illustrated by data recovered from two excavated sites, the Hurd site (11-L-71) and the McGraw Farm site (11-L-386), in Lake County (Bird 1998, Porubcan and Lurie 1998). Hurd and the Late Woodland component of McGraw are temporally and culturally related sites, perhaps task-specific sites within the Late Woodland seasonal round, one a fall hunting and harvesting encampment, the other a burial site. Flint Creek separates the encampment from the mortuary site located a kilometer northeast. Although radiocarbon dates suggest that Hurd was inhabited somewhat later than McGraw, they both contain Starved Rock Collared ceramics typical of the Late Woodland in the Upper Illinois River system and the Middle Rock River.

MARS identified three Late Woodland burial features, comprising a minimum burial population of ten individuals, at McGraw. Grauer's analysis suggests that the burials are primary interments (although the tight flexing seen on some skeletons may indicate postmortem processing). The low incidence of infection and anemia compared to contemporaneous burial populations in west-central and southern Illinois suggests that the McGraw Late Woodland individuals were part of a smaller, more dispersed population less prone to the rapid spread of infectious disease and a less sedentary population with access to a wide variety of wild food resources that may have prevented anemia. However, equivalent rates of dental caries suggest that the McGraw population had a diet high in carbohydrates probably related to the consumption of corn. This finding calls into question Jeske's and Markman's assessment of Late Woodland diet mentioned above.

Within Fermilab six sites (11-Du-163, 11-K-20, 11-K-21, 11-K-22, 11-K-24, and 11-K-206) contain tools diagnostic of a Woodland Period occupation (*i.e.,* non-specific Woodland, Early Woodland, or Middle Woodland); sites with small, triangular points and identified as Late Woodland/ Mississippian are listed in the Mississippian Period discussion below.

**Mississippian Period and the Proto-historic (950 B.P. to A.D. 1673)**

Two types of Mississippian occupations have been identified in Illinois, Middle Mississippian and Upper Mississippian. Middle Mississippian sites tend to occur along well-established rivers with wide, fertile floodplains and to rely heavily on cultivated plants. Upper Mississippian sites, on the other hand, tend to occur along young creeks and rivers extending into the Prairie Peninsula where reliance on cultivation may have been less intense.

Middle Mississippian peoples achieved the greatest level of cultural complexity in the prehistory of the United States. The river valleys were densely occupied and the settlement systems included permanent towns surrounded by smaller villages and farmsteads. Exchange networks and new systems of political control extended throughout much of the eastern United States. Mississippian subsistence was characterized by an increasing reliance on cultivated plants, particularly maize and squash. Beans enter the archaeological record for the first time in the Midwest late in the period. Deer was the most important faunal resource although migratory waterfowl, elk, bison, small mammals, and fish also made varying contributions to the protein intake. In the Greater St. Louis area of Illinois and Missouri, this Mississippian development may have reached urban proportions (Pauketat and Emerson 1997). Larger Middle Mississippian sites can be recognized by burial mounds with ritually slain and processed individuals, burials with substantial amounts of grave goods, substructure mounds, flat topped mounds, astronomical features (such as the Woodhenge at Cahokia), craft specialization, house forms, pottery styles, arrow point types, and stone hoes. Smaller sites may contain similar house forms, pottery, and stone tools. Although major Middle Mississippian sites are located along the middle and lower segments of the Illinois River Valley, there is little evidence for Middle Mississippian occupation within the Upper Illinois River basin.

Upper Mississippian peoples were probably more dispersed across the landscape than the Middle Mississippian peoples and apparently lived in smaller villages and farmsteads along rivers in the regions west, north, and east of the Middle Mississippian concentrations. In northeastern Illinois, two types of Upper Mississippian sites known as Langford and Oneota have been defined primarily by their distinctive ceramics; both types of sites have been well documented and are known to overlap in time and space. Both Langford and Oneota are found along the Upper Illinois River. Oneota sites, identified by the presence of shell-tempered pottery, are also found in the Chicago Lake Plain area of Cook County and northwestern Indiana where soils tend to be very fertile but water saturated. In contrast, Langford sites within the Upper Illinois drainage, identified by black grit-tempered pottery, extend up the Des Plaines, DuPage, and Fox

Rivers near prairie/forest boundaries (Jackson and Emerson 2013, Bird 1997, Jeske 1990, and Early 1973).

Many Langford sites in lowland and upland settings within these young river drainages have been excavated, at least partially. These sites represent different aspects of the Langford settlement system: such as Kuzwon (11-L-214) and Kuzteau (11-L-215), Cook (11-Ck-52), all small resource procurement sites (Lurie and Jeske 1986, Markman 1991); Robinson Reserve (11-Ck-2), Reeves (11-Wi-555), Wildrose Mounds (11-K-35), and 11-Wi-654, all base camps or small villages with associated burial facilities (Lurie 1992, Craig and Galloy 1996, Early 1973, Lurie and Bird 1994); and Washington Irving (11-K-52), a village with earth lodges (Jeske 1990, Bird 1989).

Subsistence remains from these sites and others show that hunting white tail deer, fishing, horticulture (primarily corn and squash and some native small grass seeds), and marsh resources were important subsistence items, just as they were in the Late Woodland. Given the environmental setting of most Langford sites, Jeske suggests that the corn-hill technique of cultivating cleared forested plots was used and that the main agricultural tool was the digging stick (Jeske 1990). The ceramic vessels and stone tools are also similar to those found in the Late Woodland. Langford ceramics differ from their Late Woodland counterparts in lip form, surface treatment, and decoration. Langford houses appear to have been small, single family structures and burials are usually flexed and placed in mounds. Although no Langford sites are dated after 500 B.P. this lifeway must have persisted in northern Illinois until the time of contact.

Within Fermilab 13 sites (11-Du-35, 11-Du-36, 11-Du-37, 11-Du-38, 11-Du-39, 11-Du-163, 11-K-19, 11-K-20, 11-K-22, 11-K-23, 11-K-24, 11-K-206, and 11-K-261) contain tools and/or ceramics diagnostic of a Langford occupation. These sites were probably small, short-term, resource procurement sites.

Neither early Oneota sites (Fisher Phase) nor later Oneota sites (Huber Phase), defined primarily by ceramic traditions, has been identified within or near Fermilab. Fisher Phase ceramic motifs include trails, chevrons, zig-zags, and punctates executed on cordmarked, shell-tempered vessels (Jackson and Emerson 2013:261). Huber Phase ceramic motifs are limited essentially to trails executed on plain, shell-tempered vessels. The width of the trailed lines diminishes through time (Brown and O'Brien 1990). Fisher sites perhaps show closer affinities and trade with Middle Mississippians and Fort Ancient groups than do Langford sites or Huber Phase sites. The relationship between Fisher and Huber remains undetermined although the spatial distribution of the sites is similar (Faulkner 1972, Jackson and Emerson 2013). However, based on currently

available data Huber Phase sites appear to outnumber Fisher Phase sites within the Chicago Lake Plain.

Some of the more prominent Oneota sites in the Chicago Lake Plain area are Huber (11-Ck-1), Hoxie Farm (11-Ck-4), Anker (11-Ck-21), Oak Forest (11-Ck-53), Fifield (12-Pr-55), Joe Louis (11-Ck-284) and Griesmer (12-La-3) (Bluhm and Fenner 1961, Bluhn and Liss 1961, Faulkner 1972, Porubcan and Baltus 2011, Brown and O'Brien 1990). Most Oneota sites, both Fisher Phase and Huber Phase, were excavated primarily by avocational archaeologists or by professionals as salvage projects conducted prior to the construction of Interstate 80 and other mid twentieth century developments. Exceptions include three field seasons (2000-2002) at the fourteenth century Hoxie Farm site (Fisher and Huber phases) site near Thornton, Illinois and a small testing project at the Joe Louis site in the Forest Preserve District of Cook County are exceptions (Jackson and Emerson 2013, Porubcan and Baltus 2011, respectively).

Oneota groups utilized a significant amount of corn and other domesticated plants and in the Fisher Phase lived in circular and oval semi-subterranean houses, sometimes within a fortified village (Jackson and Emerson 2013:457). Huber Phase people, in contrast, lived villages containing multi-family long houses. The primary agricultural tool for both Fisher and Huber was probably the bison scapula hoe used to construct planting ridges in normally water-saturated soils (Jeske 1990). Yet subsistence probably remained a mix of hunting and gathering (especially marsh flora and fauna) and agriculture. Faunal remains are too poorly preserved at Hoxie Farm to contribute new data to this discussion.

This lifeway persists until the Proto-historic Period, that period in which European trade goods and perhaps traders came into the Upper Illinois drainage but before accounts of contact were written. The first written account of contact documents the visit of Marquette and Joliet with the Illinois at the Zimmerman site (11-Ls-13), the Grand Village of the Kaskaskia in Illinois and with the Peoria at the *circa* 1640-1683 Iliniwek Village (23-Ck-116) in Missouri (J. Brown 1961, M. Brown 1975, and Rohrbaugh *et al.* 1998, Ehrhardt and Grantham 2001).

Within the region, the seminal site in linking the Late Woodland, Upper Mississippian (Langford and Huber Oneota), and Proto-historic periods is the New Lenox Site (11-Wi-213). This site contains Late Woodland, Langford, Huber Oneota and Proto-historic features (hearths, storage and trash pits, individual post holes, and a variety of structures), large assemblages of lithic and ceramic artifacts, and trade items such as brass kettle scraps, an axe, and glass beads. Most importantly, New Lenox also has excellent preservation of bone and charcoal yielding an array of 27 radiocarbon assays (Lurie 1996; Bird 2015, 2010, 2003, and 1997). The radiocarbon dates, linked with

ceramics and trade goods at New Lenox, combined with information from other late prehistoric sites show the overlap in time between Late Woodland, Langford, Huber Oneota and the early arrival of European trade goods into the area, some 50 years before written records.

Evidence from New Lenox and elsewhere in Illinois as well as in Wisconsin indicates there are commonalties between Late Woodland groups in the Upper Illinois drainage and Late Woodland groups in southern Wisconsin in subsistence, settlement, and mortuary practices and that some late Late Woodland occupations spatially and temporally overlap Langford Mississippian occupations (Kelly 2002, Clauter 2012). An examination of the site files, radiocarbon dates, and artifact collections for over 200 recorded sites with Langford components indicate that there is an expansion of Langford settlement and interaction *circa* 750 B.P. Langford settlement becomes more compact *circa* 525 B.P. and Oneota groups move from the head of Lake Michigan into the Upper Illinois drainage *circa* 450 B.P. (Bird 1997). Sixteenth century Oneota settlements yielding limited bison remains and metal objects suggest down-the-line exchange with prehistoric peoples to the west (supplying bison) and to the north and east (supplying European trade goods). Finally, the mid-seventeenth century marks the influx of non-local Native Americans from the east as the presence of beads suggests direct contact with European traders or their agents probably through the Great Lakes and various portages (see also Mazrim and Esarey 2007). Substantial quantities of bison, silver trade items, and firearms appear to post-date 280 B.P. in the region.

**Historic Period (1673 to Present)**

*Historic Native American*

Historic Indian nations known to have inhabited northeastern Illinois during this time include Fox (Mesquakie), Illiniwek, Mascouten, Miami, Menominee, Ottawa (Odawa), Potawatomi, Sauk, and Winnebago (Ho-Chunk). Portage points and river junctures along the waterways were important locations for Native American encampments and villages, and Euro-American trading posts, towns, and forts. Sources of information about the nations include accounts of traders, missionaries, Indian agents, surveyors (*e.g.,* Keating 1824), military personnel, travelers, and settlers as well as the insights gained from archaeological investigations. The Potawatomi were firmly established in the vicinity of Fermilab when the settlers arrived following the Black Hawk War of 1832.

The chief seats of the Indians appear to have been at Mill Creek just south of Batavia (3 km west of Fermilab), in the hills east of the river just south of Dundee (27 km north of Fermilab), on the site of the City of Aurora (5 km south of Fermilab)], and northeast through the Big Woods on the east side (west part of Fermilab). Well-worn Indian trails led from one to the other (*e.g.,* Butterfield Road/Illinois Route 56, Roosevelt

Road/Illinois Route 38, Batavia Road, Illinois Route 25, and Illinois Route 31). Where Calvary Cemetery, Aurora, is now located, was in the early days an Indian burial ground. Early histories of Kane County report mounds at Elgin, St. Charles, and Batavia (Joslyn and Joslyn 1908:15).

In 1823 and 1824, Alexander Wolcott, the Indian Agent at Chicago, granted a license for Indian trade to Cole Weeks at Grand Bois (that is, the Big Woods, Goodspeed and Heally 1909:53). Crawford Herrington and his younger brother James Clayton Herrington, Jr. hauled furs from Geneva, Illinois to Chicago in 1835 where the brothers exchanged them for manufactured goods (Danckers and Meredith 1999:185-186). J. C. Herrington, Jr., along with two other men, organized Kane County government in Herrington's cabin along the west shore of the Fox River.

Keating (1824) reported Menominee villages on the east bank of the Fox River near Elgin in 1823 and a mixed village of Menominee and Potawatomi near Marengo, Illinois. Samuel McCarty, who arrived in 1834 at the future City of Aurora, provides a first-hand description of the Native Americans whom he encountered (Gustafson and Schielke 1980:16-18). The Potawatomi spent their summers on the Fox River and wintered further south on the Illinois and Kankakee rivers (Danckers and Meredith 1999:353). Potawatomi lands extended from Lake Michigan on the east to the Rock River on the west (*circa* 1830 population of 3,600 in fifty villages). Waubonsee's Potawatomi villages, established near Ottawa and at the Big Woods as early as 1812, included basswood bark-covered rectangular residences constructed with red cedar post and frames (Gustafson and Schielke 1980:17, Tanner 1987:106). As late as 1835 the influential leader Waubonsee (d. 1846) resided on his reservation five miles south of Batavia on the west bank of the Fox River, perhaps near Oswego as mapped by Tanner. The treaty concluded in 1829 at Prairie du Chien (Article 3) reserved five sections of land "at the Grand Bois [Big Woods] on the Fox River of the Illinois, where Shaytee's Village now stands" to Wau pon-eh-see (Waubonsee).

The Black Hawk War of 1832, which lasted fifteen weeks within the State of Illinois and the Michigan Territory (now the State of Wisconsin), marked a pivotal point in the settlement history of the region. From April through August, Sauk and Fox with the assistance of a few Potawatomi, Winnebago, and Kickapoo under the leadership of the Sauk Black Hawk resorted to armed force to resist the United States policy of Indian removal. The perceived threat of Indian attack put a damper on settlement in the area and created panic among the earliest settlers in the region—generally at Fort Dearborn (Chicago), Walker's Grove (Plainfield), New Lenox, and Reed's Grove (Elwood). Panic-stricken pioneers in the Upper Illinois River Valley and the Lead Mining District "forted up" for protection and erected a number of blockhouses and/or fortifications. While

Tanner (1987:152) mapped 14 blockhouses, including Fort Payne in Naperville and Fort Walker in Plainfield, MARS has identified 73 fortifications erected by local settlers or miners in reaction to the incursion by Black Hawk; 24 are mapped in Wisconsin, 48 are mapped or noted in Illinois, and a single block stockade is noted in Indiana (Bird and Porubcan 2001).

Permanent Euro-American settlement of the Upper Illinois drainage, outside of the ceded Indian Boundary lands, post-dates the removal of the Native Americans following the Black Hawk War of 1832. Settlers arrived via ships through the Great Lakes or overland along established trails. A small group of Hoosiers or backcountry frontiersmen and frontierswomen opened the area now occupied by Fermilab for settlement, squatting on public land and establishing farms, mills, churches, schools, and mail delivery. A steady stream of migrants, primarily Yankee New Englanders, followed in large numbers, establishing governmental organization, new churches, and manufactures as well as improving mail delivery and platting the Village of Batavia. Incorporated as a city in 1891, Batavia continued to grow and develop as a farming and dairying community with a strong industrial base and an influx of foreign-born residents, especially Swedes and Germans toward the end of the nineteenth century. The quaint New England-style community of Batavia gained world renown in 1966 when the United States Atomic Energy Commission awarded the "scientific prize of the century" to Illinois (Gustafson and Schielke 1980:128).

*Hoosiers at the Head of the Big Woods (1833-1835)*

Christopher Columbus Payne (1786-1871) initially arrived at the "Head of the Big Woods" from Naper's settlement (now Naperville) on foot in 1832 to mark his claim and returned during September of 1833, following the Black Hawk War, with his wife Elizabeth Dawson, children (four sons and two daughters), a yoke of oxen, and seed potatoes (Richmond and Vallette 1857:9-10; LeBaron 1878:296,300; Simmons 1897:24-52; Joslyn and Joslyn 1908:21,31,122; Gustafson and Schielke 1980:7-9). Payne, an illiterate backcountry frontiersman, claimed a half-section of land on the east side of the Fox River along the edge of the Big Woods (Section 23) and erected a 14' (4.3 m) by 16' (5.8 m) cabin with a capped spring in the cellar to become not only the first settler in Batavia but the first settler in Kane County (Gustafson and Schielke 1980:7-8, Simmons 1987:31, 52). LeBaron (1878:300) suggests that the cabin may be considered the earliest tavern in the vicinity given that it frequently functioned as such even if it meant tucking the Payne children under Christopher and Elizabeth's bed to accommodate twenty-three overnight guests.

Payne, a farmer, militiaman, lead miner, and millwright, followed the frontier from the Appalachian Mountains of Somerset County, Pennsylvania to the Ohio River Valley

of Belmont County, Ohio and Dearborn County, Indiana and thence along the northward-moving frontier in the Northwest Territories (*e.g.,* Vincennes in Indiana; Madison, Sangamon, JoDaviess, Putnam, DuPage, Kane, and Boone Counties in Illinois; and Walworth, LaFayette, Winnebago, Fond du Lac, and Columbia Counties in Wisconsin) as noted in Table 1.

Table 1. Residential trail of Christopher Columbus Payne as gleaned from various histories.

| Arrive | Depart | Yrs. | Residence | Occupation and notations |
|---|---|---|---|---|
| **Pennsylvania** | | | | |
| 1786 | 1799 | 13 | Somerset Co. | Place of birth (wilderness) |
| **Ohio** | | | | |
| 1799 | 1806 | 7 | Belmont Co. | Hunter on frontier |
| **Indiana** | | | | |
| 1807 | 1812 | 5 | Dearborn Co. | Surveyor and soldier, married |
| 1812 | 1815 | 3 | Vincennes | Farmer, child died, unhealthy climate |
| **Illinois** | | | | |
| 1815 | 1824 | 9 | Madison Co. | Farmer |
| 1824 | 1827 | 3 | Sangamon Co. | Farmer |
| 1827 | 1829 | 2 | Galena, JoDaviess Co. | Miner (unsuccessful) |
| 1829 | 1831 | 2 | Hennepin, Putnam Co. | Farmer |
| 1831 | 1833 | 2 | Naperville, DuPage Co. | Farmer, millwright, militia |
| 1833 | 1835 | 2 | *Batavia, Kane Co.* | Farmer, daughter m. Geo. W. Trimble |
| 1835 | 1836 | 1 | *Belvidere,* Boone Co. | Farmer |
| **Wisconsin** | | | | |
| 1836 | 1837 | 1 | *Lake Geneva,* Walworth Co. | Millwright |
| 1837 | 1844 | 7 | Lake Como, Walworth Co. | Miller |
| 1844 | 1860 | 16 | LaFayette Co. | Miller at “Harkness” with son |
| 1860 | 1864 | 4 | Duck Creek, Winnebago Co. | |
| 1864 | 1864 | 1 | Fond du Lac Co. | |
| 1864 | 1864 | 1 | Linn Twp., Walworth Co. | with son Uriah |
| 1864 | 1871 | 7 | Scott Twp., Columbia Co. | with son George |

*Italic=First Euro-American settler in that place.*

Christopher Columbus Payne has been described as a farmer but was also a veteran of the War of 1812 serving 12 months with the Rangers in Indiana and a veteran of the Black Hawk War of 1832. In the Black Hawk War he served as a member of the Mounted Volunteers under Captain Joseph Naper of Major Nathaniel Buckmaster's Odd Battalion guarding frontier settlements in northeastern Illinois 16 June through 13 August 1832. While he was unsuccessful as a miner in Galena (1827-29), his talents as a millwright helped to build communities along the frontier. In 1831 he built a dam and made grinding stones for the Naper brothers' first mill at Naper's settlement, in 1836 he began a sawmill in Lake Geneva, Walworth County, Wisconsin, and in 1837 and in 1844 he constructed and operated sawmills at Lake Como, Walworth County, Wisconsin and in Lafayette County, Wisconsin, respectively. Christopher Columbus Payne, son of Adam Payne and Rachel Dawson and husband since 1807± of Elizabeth Dawson (1792-1869), died at his son's home in Scott Township, Columbia County, Wisconsin 18 February 1871 and is buried in Marcellon Township Cemetery within the same county.

A few families of settlers inhabited the Head of the Big Woods by the spring of 1834, including Payne, as noted above, as well as Christian Bowman Dodson (1809-1891, b. Columbia Co., PA), Archibald Clybourn (1802-1872, b. Giles Co., VA), Joseph Lyon (b. NY), James Vanatta, James Nelson, John Gregg (b. 1804, OH), and Mr. Corey (LeBaron 1878:296-8, Ehresmann 1977:19, 1850 Federal Census). While Payne traveled on foot, others may have enjoyed the swiftness noted by Ehresmann (1977:28) from Massachusetts: leaving 12 September 1836 by canal to Buffalo, New York on steamer to Chicago and a day to Geneva arriving 1 October 1836. Overland routes were exceptionally slower. Twenty miles a day was "good traveling" on foot or by ox team as water obstacles abounded (Joslyn and Joslyn 1908:31).

The frontiersmen and women opened the area for settlement, squatting on public land and establishing farms, mills, churches, schools, and mail delivery. Payne never held legal title to his Batavia Township claim since the land sales for Kane County did not open until 1842; nonetheless, Christopher sold his cabin and improvements to Isaac Wilson of Batavia, New York in 1835 for $1,500. Isaac Wilson purchased the parcel containing Payne's claim from the Public Domain (240 acres, the E 1/2 of the NW 1/4 and the SW 1/4 of Section 23, Batavia Township) on 10 March 1843. Elijah S. Town, a Yankee who settled permanently in Batavia about 1835, described his friend Christopher Payne as "one of the roughest men in the world but possessed of a generous and kind nature, self-described wanderer all his life, a pioneer by nature, ever hovering on the outer edge of civilization and seldom remaining long enough at one place to enjoy the fruits of his labors" (LeBaron 1878:299-300).

Fourteen historic properties within Fermi comprise pre-emption land patent parcels (11-Du-216, 11-Du-555, 11-Du-565, 11-Du-570, 11-Du-571, 11-Du-579, 11-Du-586, 11-Du-588, 11-K-1228, 11-K-1229, 11-K-1244, and three not relocated). Andrew Spear settled first in June of 1834 (Section 24 of Batavia Township) with his wife and five children, according to the Proof of Right of Pre-Emption files curated at the National Archives and Records Administration (NARA). Other families followed in 1835 (James Brown, Phineas Graves, George Clinton Howe, and William Williams families); in 1837 (Milo Milton Kemp and Ira Woodman families); in 1839 (James N. Wilson family); in 1840 (David McKee and Timothy D. Woodward families); in 1841 (Jesse Graves family); and in 1842 (John Carr and Taylor S. Warne families). The number of acres planted to prove the pre-emption claim ranged from 0.25 to 40.00 acres according to the National Archives and Records Administration files. Primary crops included corn and potatoes with secondary crops of peas, wheat, oats, and unspecified garden vegetables. Examination of the archaeological site locations in relationship to the timber-prairie ecotone shows that the majority of the land patent parcels indicate settlement along the prairie-timber ecotone. The "road to Warrenville" followed the timber line as well.

Backcountry frontiersmen C. B. Dodson and A. Clybourn, who also established themselves in Chicago, erected Kane County's first sawmill and store, a trading post at the short-lived (1834-35) Clybournville settlement at the mouth of Mill Creek (corner of Sections 27, 28, 33, 34). When the settlement failed in 1835, John Peter Schneider took over the mill (Ehresmann 1977:19, 37). Julius Morton Warren, who arrived at McDowell Woods in Winfield Township (now Warrenville) in 1833, built a sawmill along the bend in the DuPage River the following year (1834); his father-in-law Alvah Fowler, in partnership with Warren and Franklin Smith, adjoined a grist mill in 1847 (Bird and Tolmie 2010, Richmond and Vallette 1857:60, 158). Although Winfield Township was initially settled in 1832 by brothers Jude and Erustus Gary, it was not until 1837 that they erected a sawmill at the small settlement (Gary's Mill, later Turner Junction, now West Chicago); a flouring mill was in place prior to 1857 (Richmond and Vallette 1857:60,158). The Winfield Township mills lie over six kilometers to the east of the Big Woods. Titus Howe erected a dam and sawmill in 1835 at the island (Section 22), which was washed out the following year; the Batavia Mills entrepreneurs, including Harry Boardman, bought out Howe and established a flouring mill at the location (Joslyn and Joslyn 1908:123,821). Reverend N. C. Clark preached the first sermon in a grove near Payne's cabin 8 August 1834 and the Presbyterian Church, the first organized denomination in Kane County, was then and there organized. The establishment of the Presbyterian Church as the first organized in the county reflects the religious tendencies of the backcountry settlers. LeBaron (1878:301) and Joslyn and Joslyn (1908:822) state that a log cabin erected in 1834 may have functioned as the first school. Gustafson and Schielke (1980:31) suggest that the cabin school was erected on Lyon's Farm. All agree

that a school was definitely in place by 1835. Mail delivery involved a ride to Naperville or Chicago and $0.25 postage due (Gustafson and Schielke 1980:29).

*New Englanders Organize (1836-1890)*

A steady stream of migrants, primarily Yankee New Englanders, building upon the infrastructure established by the Hoosiers, organized governmental bodies (*e.g.,* county, township, and village), erected new churches and manufactures, improved mail delivery, and platted the Village of Batavia in Batavia Township as well as Turner Junction and Warrenville in Winfield Township. Settlers at the Head of the Big Woods considered themselves Batavians; therefore, the remaining discussion will focus on establishing the historic context of Batavia Township.

Kane County organized in 1836 although it was not until 1840 that the public domain land was surveyed and an additional two years (1842) before it was put on the market. The incipient village at the Head of the Big Woods was platted and the river banks bridged in 1837. Isaac Wilson named the settlement at the Head of the Big Woods "Batavia", a Dutch word meaning fair meadows, in 1840 after his home town of Batavia, New York (Gustafson and Schielke 1980:25). The citizens organized Batavia Township 2 April 1850 and promptly adopted two regulations: 1) Stallions, bulls, asses, and hogs may not be at large at any time and 2) Oxen, steers, cows, heifers, geldings, and mares may be at large from 1 April through 1 December only (Gustafson and Schielke 1980:41-2).

An examination of the census records and the county histories record a substantial influx of New Englanders into Batavia Township and the county at large (Bird 2013d, Ehresmann 1977:28, Gustafson and Schielke 1980:35). The new settlers organized a Congregational Church for themselves at the Big Woods on 11 November 1843. Beginning in 1839, the stagecoach brought mail from Chicago on Mondays, Wednesdays, and Fridays to Naperville, Warrenville, Geneva, and St. Charles. After 1842 and the appointment of the first postmaster in Batavia, Isaac Wilson brought the mail from Naperville every two weeks.

Until the *circa* 1871 switch from grain farming to dairying, two Batavia-based manufactures appear to be worthy of note, Danford and Churchill's harvesting and threshing machine and the windmill. Twenty-three year old Batavia resident Eben Danford (b. 1815, NH) and Alfred Churchill built and patented on 16 August 1841 a harvesting and threshing machine that functioned without chopping up the straw as witnessed on the J. M. Warren Farm in Winfield Township by James Brown, the "improved mode of harvesting is an important invention for the farmer, saving a great amount of work" (Ehresmann 1977:37). Windmills, invented and manufactured from 1854 through 1857 by Daniel Halladay in his Ellington, Connecticut shop, were

introduced into Chicago by sales agent John Burnham. John VanNortwick and Burnham decided it would be better to manufacture the mills closer to where they were used and so the United States Wind Engine & Pump Co. was formed 25 March 1857 and in 1863, the partners erected stone buildings on West Wilson Street, Batavia to manufacture windmills, pumps, feed mills, and railroad fixtures (Gustafson and Schielke 1980:51).

Population in 1847 within Batavia Township was 412 (214 males and 198 females), primarily natives of New York. Between 1860 and 1890, 30% of the residents of Batavia Township were foreign-born (Gustafson and Schielke 1980:59). European immigrants provided churches for themselves which mark their arrival much as the Presbyterian Church marked the arrival of the Hoosiers and the Congregational Church marked the arrival of the Yankees; the German Methodist Church, established in 1862, marked the arrival of the emigrants from the German Federation of States while the Swedish Methodist Episcopal Church, established in 1870, the Independent Swedish Evangelical Luthern Church, established in 1870, and the Swedish Lutheran Church, established in 1872, mark the arrival of the Swedes.

*City of Batavia, Village of Weston, and Fermilab (1891-Present)*

Since most of the early settlers came from the northeast, the City of Batavia looked much like any mid-nineteenth century New England town when it was incorporated in June 1891) and it remained a farming and dairying community until the mid 1960s (Bird 2013d, Gustafson and Schielke 1980). The farmers in eastern Batavia Township and western Winfield Township considered themselves Batavians and development of the Weston subdivision on the farmland along Warrenville-Batavia Road threatened the community's way of life (Bird 2013a). Plans for the subdivision vanished when the State of Illinois purchased the subdivision and over 50 farmsteads (6,800 acres) in 1967. The state eventually donated these acres to a project that would transform the farmland but in such a way as to return at least part of the land to its pre-Euro-American settlement environment.

Described as "the scientific prize of the century," the United States Atomic Energy Commission (now the DOE), proposed to build an "atom smasher" in California, New York, New Jersey, or Illinois. The commission chose Illinois—the offer of 6,800 acres of free land with its flat topography, access to water, and access via tollway to a major airport (*i.e.,* O'Hare International) swayed the commission to choose Weston/Batavia as the site of the first National Accelerator Laboratory in December 1966. Fermilab's designer and first director Dr. Robert Rathbun Wilson (1914-2000) created a facility with double the planned experimental power, under budget, and a year earlier than scheduled. Wilson imbued the facility with his eye for art, and landscape restoration (Hilts 1982). Fermilab contributes greatly to the economy, education and prestige of the community.

# Appendix D:

Previous Archaeological and Historical Investigations and Known Site Summaries

Rochelle Lurie and M. Catherine Bird

## *Previous Archaeological and Historical Investigations*

### Ann Early's Investigations at Fermilab (1970, 1971)

In 1970 and 1971 Ann Early, then a graduate student at the University of Massachusetts provided the base line archaeological study for Fermilab property. "The original initiative for this survey was based upon the discovery by NAL employees of numerous artifacts on the Laboratory property and the desire of Laboratory director Dr. Robert R. Wilson to provide proper investigation of the materials and of the Accelerator site itself before construction activities destroy whatever archaeological remains might exist" (Early 1970:1). Early surveyed 5,900 acres of plowed fields in 300 quadrants (22.3 acres in each), and conducted collector interviews with former landowners and eleven Fermilab employees. Her 1970 survey, comprising 86.8% of the facility, included all previously cultivated land, which was being restored to prairie prior to NAL development, as well as land under continued cultivation. Pedestrian survey was conducted at 10-foot (3.05 meter) intervals under ideal field conditions. The 1970 survey identified 24 sites with components dating from the Early Archaic through the Historic Periods, and numerous "stray" artifacts (isolated finds) within quadrants (Early 1970: 24b, 105). In 1970 and 1971 Early also tested seven sites that she and her crew had discovered. Documentation for her investigations is contained in two reports (Early 1970, 1971). Ms. Early used Fermilab data for her dissertation research (Early 1973).

### Robert Jeske's Review and Evaluation of Fermilab Archaeology (Jeske 1986)

In 1986, Robert Jeske, then a graduate student at Northwestern University, accepted an internship at Fermilab and worked to relocate the 24 sites that Ann Early had found, to evaluate her survey and testing methodologies, and to recommend projects needed for Fermilab's compliance with federal law. Jeske's report (Jeske 1986) also included a description of Fermilab's physical landscape, a prehistoric settlement model, and a culture history for Illinois. As part of his evaluation Jeske conducted several small surveys in areas that Early had surveyed previously. He located only one small prehistoric site (Garden North/Gregory/NAL-25, 11-Du-162) and concluded that Early's survey results were reliable and that the spatial patterning of sites at Fermilab noted by Early was reasonable. While Early noted that site distribution [prehistoric] correlated with the distribution of soils that formed under forest vegetation, Jeske (1986:21) added "sites are centered on the marshy areas near Indian and Ferry Creeks, as well as the wetter areas in the central and southern portions of the study area."

Jeske examined the patterning of sites by culture/time period and found a shift in site location and frequency. Sites with Archaic components[1] are the most plentiful and are most widely distributed; Woodland occupations are limited in number and restricted to the Indian Creek drainage; and finally sites with Mississippian components, while fewer in number than sites with Archaic components, are also plentiful in the western and southern portions of Fermilab. Jeske (1986a:21) elaborated, "This pattern is not unexpected for northern Illinois. A number of researchers have noted that Archaic sites seem to be concentrated on upland marshes, with a riverine focus during the Woodland and an expansion back to prairie/savanna environments during the Mississippian (*e.g.,* Harrison n.d., Markman and Mansberger 1985). Since Fermi is between two rivers, we would expect Woodland occupations to be located off-site."

Jeske did have some reservations about Early's survey work, specifically the lack of good locational data but concludes that "...the data ... are adequate for designating priority areas site definition and preservation (Jeske 1986:29). He also comments on the lack of good excavation documentation but feels this is only a problem at the Gazebo site (11-Du-38), the only tested site with undisturbed deposits (see below). He strongly disagreed with Early's negative evaluation of the potential for recovering undisturbed deposits of archaeological material at Fermilab.

Finally, Jeske made several cultural resource management recommendations in his manuscript including protecting sites in plowed field context from further erosion by taking them out of agricultural production, surveying previously unsurveyed woodland and pastureland (using shovel probe techniques outlined in his report), developing a program of testing sites with good potential for providing important archaeological information, monitoring sites on a yearly basis, and developing procedures for evaluating construction projects that will result in ground disturbance. Many of these recommendations have since been implemented.

**Testing of Six Sites in Plowed Field Context (Lurie and Jeske 1989)**

In the spring of 1987 and the spring of 1988, MARS conducted limited Phase II testing of six sites within active agricultural fields at Fermilab. Five of the sites had been located by Ann Early in 1970: Kautz (11-K-23), Lorenz (11-K-207), Pioneer (11-K-24), Pohl (11-Du-35), and Trust (11-Du-157). Jeske (1989:2) had identified the sixth prehistoric site (11-Du-162) in 1986. Goals included increasing the precision of site location, determining site boundaries, and assessing each site for NRHP eligibility. Routine plowing and/or disking, as well as collector predation, endangered the integrity of these sites.

[1] At that time there was no evidence for Paleoindian sites at Fermilab.

Four sites (11-Du-157, 11-Du-162, 11-K-23, and 11-K-207) yielded so few artifacts that it was not possible to confirm site boundaries. Three sites (11-Du-157, 11-Du-162, and11-K-207) appeared to be ephemeral sites with little potential for the recovery of significant archaeological data and, therefore, not eligible for inclusion on the NRHP. Although Early collected a substantial number of artifacts from 11-K-23 in 1970, very few were collected in 1986 or 1987; shovel probes excavated on the site suggested that no intact deposits remained below the plow zone. Therefore, the Kautz site (11-K-23) is not eligible for inclusion on the NRHP. Both the Pohl (11-Du-35) and Pioneer (11-K-24) sites are situated on eroded landscapes, and have been continually scavenged by amateur collectors. Cultural material present on the surface of each site is widely scattered with no indication of intact deposits. Therefore, neither site 11-Du-35 nor 11-K-24 is eligible for inclusion on the NRHP.

While surveying to relocate the Pioneer site, MARS discovered a cluster of artifacts southwest of the known site. Pioneer West (11-K-274) included nine flakes. No artifacts were recovered from shovel probes in the woods to the east of the site and no anomalies were found in soil cores taken from the site. Given the low numbers of artifacts collected from these seven sites, and/or the eroded nature of the soils on which they are situated, none of these sites appears eligible for the NRHP.

**Curation of Artifacts Collected 1970-71 and 1986-87 (Lurie and Jeske 1989)**

In 1987, MARS examined the artifacts recovered by Early and Jeske and repackaged them for storage at Fermilab. Ann Early had previously (prior to 1986) curated the cultural materials collected in 1970 and 1971 at the Arkansas Archaeological Survey. MARS reorganized, packed, and assessed the collections for completeness to make the collections accessible for further scholarly research.

Cultural material that Jeske recovered from survey and testing at the Garden North (11-Du-162) Kautz (11-K-23), Lorenz (11-K-207), Pioneer (11-K-24), Pohl (11-Du-35), Potawatomi (11-K-21), and Trust (11-Du-157) sites in 1986 had been stored previously at Northwestern University's field laboratory in Elgin, Illinois.

Lurie and Jeske (1989:4) detail their curation procedures in their report of investigations. During the curation procedure MARS noted that not all of Early's sites had been reported to the IAS and therefore had no official site number. MARS completed site forms for all of the unnumbered sites.

In preparation for moving artifacts to permanent storage at the ISM in the fall of 2002, MARS repackaged the artifacts, as needed, to meet the ISM standards.

**Survey of Wooded Areas (Lurie 1990)**

In 1987 and 1988 MARS surveyed some of the non-agricultural parcels (woods and pasture) at Fermilab—approximately 302 acres—as Jeske (1986a) recommended. MARS excavated shovel probes at 15-meter intervals across parcels identified as Avenue B Woods, Buffalo Grove, Eola Road Pasture, Gazebo Woods, Heron's Home, Kautz/Pioneer Woods, Pine Street North, Pine Street South, Ring South, Runde Woods, West Entrance, Woodland Hills North, and Woodland Hills South (Lurie 1990:4).

MARS identified one prehistoric site (Avenue B/NAL26, 11-K-208), which may have been partially destroyed by road construction. The debris recovered from the site is sparse –a non-diagnostic stone tool fragment, two flakes, and five blocky chert fragments from an area 120 meters by 80 meters. In addition MARS recovered two isolated finds—one from the Gazebo Woods and one from the Wilson Woods—as well as a number of historic artifacts from near Farm Book 14 (11-K-1227).

**Gazebo Site Testing (Lurie 1990)**

In the summer of 1988, MARS excavated five test units (16.25 $m^2$) at the Gazebo site (11-Du-38). Ann Early had excavated five test units (100 $ft.^2$ or 9.29 $m^2$) in 1971 (Early 1971:31-32). Early reports that prior to Fermilab's excavation of the pond south of Gazebo *circa* 1970-74, the Gazebo site fronted a seasonal wetland with undisturbed woods in the northern portion of the site and relict agricultural fields in the southern portion. Early found a substantial Archaic component (to a depth of 50 cm in the wooded portion) and an ephemeral Upper Mississippian component at the site.

MARS tested Gazebo in 1988 to confirm the undisturbed nature of the part of the site in the oak grove and to assess the potential of the site for yielding archaeological features, and plant and animal remains. MARS recovered 11 tools or tool fragments, 178 flakes, 44 blocky chert fragments, and over 112 pieces of fire-cracked rock [2.3-kg]) in 1988; generally from between 20 and 30 cm below the ground surface with some between 30 and 45 cm below the surface. One feature, a concentration of fire-cracked rock, was excavated along with a small amount of carbonized nutshell (0.6 grams) from this concentration. The nutshell yielded a calibrated radiocarbon date of 3,980-3,770 B. C. (Lurie, Kullen, and Demel 2009).

Diagnostic points found during survey and testing within the oak grove are almost all side-notched or shallow side-notched Middle Archaic points. Several Fermilab collectors (see below) have tools from the plowed area of the site. One collector noticed areas where possible features may have been eroding out of the edge of the wooded area.

Gazebo appears to be primarily a Middle Archaic site with good potential for containing additional features with carbonized remains. Gazebo is one of only a handful of intact Middle Archaic sites in northern Illinois. The site is eligible for the National Register of Historic Places. No further work should be conducted at the site until a well-conceived archaeological research plan is established. The research plan should provide a theoretical foundation for specific research questions to be addressed by the data recovered and should give details of excavation and analyses procedures

**1989 Collector Interviews (Lurie 1990)**

In the Fall of 1989 MARS interviewed seven Fermilab employees with collections of artifacts from Fermilab property as well as photographed and identified the artifacts within each collection. Fermilab, MARS, and the ISM hold copies of the interview forms and the eight-inch by ten-inch prints. These collections, like those examined by Early in 1970, sometimes contained hundreds of formal tools. Some of the find spots correspond to known sites, some relate to Early's isolated finds, and others are places where professional archeologists failed to find any cultural material (Lurie 1990:22). Other collections were made in areas in which no artifacts had been recovered in professional surveys.

Almost all collections contained artifacts from the Early Archaic through Historic periods, although Middle Archaic and Late Archaic points predominated; only two collections contained Paleoindian points. Almost all of the artifacts appeared to be made from locally available cherts, but one Paleoindian point is made from a blue-black chert of unknown origin. Projectile points dominated the collections although each also included a few scrapers and drills. Richard Nelson's collection was the most diverse. David Musser's collection contained some of the largest items—axes/celts/adzes.

MARS asked each collector to pinpoint collection areas on an aerial photograph (Lurie 1990:22). The southwest corner of Fermilab was the focus of much collection. Several known sites had been heavily collected—including Pohl (11-Du-35), Kautz (11-K-23), Pioneer (11-K-24), Lorenz (11-K-207), and Gazebo (11-Du-38) sites (Lurie 1990:23-26). All seven of the collectors had tools from one find spot (11-Du-163); field survey of this area during the Historic Site Survey (Shaffer *et al.* 1993, see below) confirmed the presence of at least one prehistoric site at this location.

The interviews added valuable information to the knowledge of Fermilab archaeological resources. Foremost, MARS defined the Director's House Site (11-Du-163) from the collections of Jim Edwards, Richard Nelson, and Keith Schuh. The interviews confirmed the pattern of site distribution discussed previously by Early (1970) and Jeske (1987).

Archaeologists often recover few tools, especially chronologically sensitive tools, when surveying and testing sites in plowed fields. The field strategies reported by collectors provide an explanation for this phenomenon. Private collectors "work" a site over a number of years, and collect under the best of conditions—multiple collections from freshly plowed and rain-washed fields. Collectors also gather the most obvious prehistoric materials, chronologically sensitive projectile points/knives and a few other formal tool types but tend not to collect broken items, retouched flakes, or chert debris. Some Fermilab sites have been very heavily collected. It is little wonder that archaeologists recover few formal tools during testing. Site impoverishment is common in areas other than Fermilab.

**1989 Small surveys (Lurie 1989a, 1989b)**

In 1989 MARS conducted two small surveys in advance of construction. MARS did not recover any cultural material during survey in advance of building the Lederman Science Center (Lurie 1989a). Lurie and Stollenwerk surveyed a 2.5-acre agricultural field (NE ¼ of the SE ¼ of the NE ¼ of Section 36 in Batavia Township, Kane County, Illinois) in which Richard Nelson reported finding prehistoric artifacts. This area was slated for construction associated with the Main Injector. MARS recovered only a light scatter of historic artifacts, most likely associated with the farmstead located to the northwest (Farm Book 15). MARS completed an IHPA Survey Short Survey Report Form to document the survey (Lurie 1989b). The IHPA reviewed the project and cleared the area for construction.

**1990 Field School (Bird and Lurie 1991)**

Elgin Community College archaeological field school, conducted by MARS, completed Phase I and Phase II archaeological investigations for Fermilab in the summer of 1990 to determine the extent and nature of historic and prehistoric cultural resources on two parcels of land: the Anti-Proton Collider Hall 204 parcel and the Pine Street Prairie Restoration parcel. MARS recorded three new sites on the Anti-Proton Collider Hall 204 parcel (11-K-201, 11-K-202, and 11-K-203); recorded two new sites (11-K-204 and 11-K-205) and revisited two known sites (Malone [11-K-22] and Shabbona [11-K-206]) on the Pine Street Prairie Restoration parcel.

*Anti-Proton Collider Hall 204 Parcel:* The students, under the supervision of MARS archaeologists, walked both parcels at 10-meter intervals. The field school surveyed and tested within the Anti-Proton Collider Hall 204 parcel in advance construction associated with the Main Injector Ring. Several Fermilab collectors had found archaeological materials in this field (Collector Site 16, see Lurie 1990). All three of the sites (11-K-201 through 203) contained historic and prehistoric artifacts.

Site 11-K-201 yielded 113 historic artifacts and 24 non-diagnostic prehistoric artifacts. The students excavated two test pits on the site but did not identify any cultural features under the plow zone. The historic artifacts appear to be associated with the *circa* 1842 John and Bridget Carr Farmstead (FB 18/11-K-1229) (Bird 2013d:15-16). Site 11-K-202 yielded 251 historic artifacts (primarily slag) and 18 prehistoric artifacts. MARS excavated one test pit on site but discovered no cultural features under the plow zone. No farmsteads are shown in the vicinity on historic plats. Site 11-K-203 contained 19 historic artifacts and 14 prehistoric artifacts including a possible Early Archaic Fox Valley point and a Middle Archaic Godar or Raddatz-like point. The historic materials appear to be associated with the *circa* 1868 Herman and Wilhelmina Schwahn Farmstead (FB 24/11-K-1226) (Bird 2013d:21-23). MARS excavated one test pit but did not discover any cultural features under the plow zone. All three sites (11-K-201 through 203) are ineligible for the NRHP.

*Pine Street Prairie Restoration Parcel:* The field school also surveyed 60± agricultural acres, recently plowed and sown with prairie plant seeds. Ann Early surveyed the area in 1970, but the fields had been fallow and grass-covered at the time. She had identified the Shabbona site (11-K-206) and part of the Malone site (11-K-22) in this parcel. Early described Shabbona as a low-density lithic scatter, probably the smallest site on Fermilab property. The 1990 investigations, under ideal field conditions, greatly expanded the areal extent of the site to 313 meters by 206 meters (Bird and Lurie 1991:25; see also the Site Correction Form submitted 8/28/13). MARS collected both historic and prehistoric artifacts. The 193 historic artifacts include ceramics, glass, metal, coal, and lead associated with *circa* 1860 Hill Farmstead-Malone Farm (FB 31/11-K-1236) (Bird 2013d: 28-30). MARS recovered nine stone tools, including a Jack's Reef point (Late Woodland), a Cahokia Side-notched point, and a Madison Triangular point (both from the Mississippian period), three chert cores, 58 pieces of knapping debris, and a small Langford Tradition body sherd (Mississippian Period) from Shabbona. The students excavated two units on Shabbona but discovered no cultural material below the plow zone. Shabbona has not been adequately tested to determine NRHP eligibility.

The field school students collected three prehistoric artifacts (a core, a deep side-notched Godar point, and a utilized flake) from Malone (11-K-22) but did not excavate any units. Early (1970) suggested an Upper Mississippian affiliation for the site based on the recovery of Langford Tradition ceramics; however, the Godar point probably dates to the Middle Archaic Period. Early (1971:34-40) tested the site and excavated 13 units (92.9 $m^2$) with artifacts wholly confined to the plow zone. The site is not eligible for inclusion on the NRHP.

The students also identified two new sites (11-K-204 and 11-K-205) during the survey of the 60-acre parcel. Site 11-K-204, a linear scatter of prehistoric lithic materials and some historic material (N=40-50), on the north and east sides of a small depression, yielded 16 prehistoric tools and 55 pieces of knapping debris. The 16 tools include an Early Archaic Kirk point, two Middle Archaic side-notched points, a Late Archaic Madison Side-Notched point, and a Late Archaic/Early Woodland expanding stem point. The historic scatter contained both 19th and 20th century artifacts and probably represents a dump. The site has not been tested to assess NRHP eligibility.

Site 11-K-205 comprises a historic scatter along a tree-lined fence. The scatter cannot be related to any building locations depicted on the historic plat series. The assemblage comprises a piece of container glass, four brick fragments, and 68 middle-to-late-nineteenth century whiteware (hand-painted and transfer-printed), ironstone, and stoneware fragments. The site has not been tested to assess NRHP eligibility.

**1990 Historic Site Survey (Shaffer, Goldsmith, and Lurie 1993)**

Through 1989 the emphasis of Fermilab archaeology had been on prehistoric sites. In 1990, MARS conducted a comprehensive review of maps and documents followed by field reconnaissance designed to locate historic sites in particular and to assess the sites for NRHP eligibility.

Although almost all of Fermilab had been field surveyed by the end of 1989, narrow, grass-covered strips of land along roads and wooded or otherwise overgrown plots of land that mark the locations of farmsteads or houses (present when the Federal Government bought the parcels) had not been evaluated. Mark Shaffer and his MARS crew began the task by examining the DUSAF (1968) *Plan For Existing Buildings on the NAL Site Near Batavia, Illinois* (the "Farm Book"). The Farm Book documented the architectural resources—extant buildings and structures only. Of the 75 properties listed in the Farm Book (FB), seven sites (FB 3 [11-Du-218], FB 19 [11-Du-582], FB 24 [11-K-1226], FB 25 [11-K-1232], FB 52 [11-Du-565], FB 54 [11-Du-225,] and FB 58 [11-Du-223]) included information suggesting build dates prior to 1880. MARS gathered detailed accounts of the seven early properties and their owners. Additionally MARS identified 81 potential historical archaeological sites on nineteenth century and turn-of-the-century Kane and DuPage County plats. MARS gathered limited information on the occupants of these 81 sites in advance of fieldwork.

MARS identified 34 historical sites in the field and suggested that 15 appeared to have deposits of middle to late nineteenth century artifacts that warrant further research. MARS completed the historic sites research in 2013 (Bird 2013d) with additional

material added in 2014 (Appendix F). The 2013-14 report summarizes and corrects site information presented in the 1990 report.

**Survey of Three Collector Sites (Lurie 1991)**

MARS surveyed Collector Sites 2, 3, and 15 (see Lurie 1990) in May of 1991 prior to planned development. MARS identified two isolated finds, comprising a biface fragment and three small heat-treated blocky chert fragments, within the 22-acre area of Collector Sites 2 and 3 (Section 31 Winfield Township). MARS recovered eight artifacts (11-K-261), including a Middle Archaic Morrow Mountain point and a Late Woodland or Mississippian Period Madison point, within the 8.5-acre area of Collector Site 15 (Section 25 Batavia Township). Neither the isolated finds nor the site (11-K-261) is eligible for inclusion on the NRHP.

**Flagging Sites Near the Main Injector Project (Bird 1992)**

On 29 April 1992, MARS met with Fermilab staff and flagged four sites (11-K-18 [Tadpole], 11-K-207 [Lorenz], 11-K-24 [Pioneer], and 11-K-274 [Pioneer West] endangered by construction of the Main Injector ring. MARS placed flags at 10 to 15 meter intervals around each of the sites (encompassed site limits plus a buffer). A drive-by inspection of these site areas in 2002 indicated that the sites had been preserved. However, Tadpole has since been tested (Tolmie, Lurie, and Martinez 2013).

**Pioneer Cemetery (Bird 1999)**

In December of 1999, MARS monitored topsoil stripping south of Pioneer Cemetery to identify suitable areas for additional interments. Although the cemetery is clearly marked on the modern Aurora North 7.5' U.S.G.S. quadrangle and readable headstones document deaths occurring from 1846 through 1851, the cemetery is not depicted on any of the available historical plats (1851 through 1904). The cemetery is currently enclosed with a split rail fence.

MARS (Bird 1999) utilized a track backhoe to investigate outside of and along the southern edge of Pioneer Cemetery for any possible burials so that Fermi could grant the founding director's request to be interred therein at the time of his death (HSRPA 99-117). Fermi buried Robert Rathbun Wilson (1914-2000) and his wife Jane Inez Scheyer within the cemetery's extended area in 2000 and 2006, respectively. Mark Esarey, then Chief Archaeologist and Burial Law Coordinator, requested that MARS, Inc. record the cemetery as an archaeological site (11-Du-453).

**Cultural Resource Management Plan and Permanent Curation (Lurie, Jeske, Bird, Johnson, and Atchison 2002)**

To meet requirements of the NHPA, MARS drafted a Cultural Resource Management Plan (CRMP) for Fermilab in 2002. While the CRMP established programmatic goals, the DOE choose not to execute a Programmatic Agreement (PA). As part of the endeavor, MARS also prepared artifacts for permanent storage at the ISM with transfer completed during the fall of 2002. All artifacts, site documentation, and reports are curated at the ISM with copies of the documents and reports held at MARS and Fermilab. This CRMP (Lurie and Bird 2014) is an update of that original plan.

**Accidental Discovery of Two Wells (Bird 2011, Bird and Lurie 2012a, Bird 2012, Bird and Lurie 2012b)**

Over a one-year period (June 2011-April 2012), Geoff Eargle (formerly with the ESH&Q Section) alerted MARS concerning the accidental discovery of two wells. These discoveries led to a review of various reports and documents relating to the identification of Euro-American historic properties at Fermilab and led to a number of projects designed to assist Fermi in efficiently managing their historic properties (Bird 2013d).

*Well 1:* MARS visited a DuPage County agricultural field (AG 5A) at Fermilab on 7 June 2011 after a farmer uncovered a limestone-lined well. MARS conducted an informal Phase I survey within the corn field surrounding the well. Artifacts noted on the surface included large pieces of cast iron, architectural limestone, shell edge and transfer print whiteware, stoneware, ironstone, container glass, and window glass. The 1874 plat shows "J. Brummel" as the owner of a 43.87-acre farm containing the residence while the 1904 plat shows "Henry & Herman Brummel" as owners of a 78.50-farm. The well is lined with limestone and capped with metal debris, organic material, and soil. Although the surface opening to the well measured about 30 in. (76 cm) by 33 in. (84 cm), MARS, Inc. estimates the above ground orifice of the well at 36 in. or 91 cm. Fermi personnel plumbed the depth of the well (16 ft. or 4.9 m). The fluctuating water within the well most likely aided in the breakdown of the wood that once covered the opening until the old cap finally gave way to the heavy tractor traversing the agricultural field. The John and Elizabeth Brummel Farmstead (11-Du-524), recorded during this project, has not been evaluated for National Register of Historic Places eligibility.

*Well 2:* Fermi personnel discovered a well on the Alvin and Eunice Ball Farmstead (11-Du-219) during brush clearing activities in April of 2012 and reported their findings to MARS. The well is in the former location of the residence, about 90 ft. (27.4 m) west of the driveway and about 90 ft. north of Wilson Street. Fermi personnel recovered five bottles from the well. All appear to be early twentieth century in date.

Alvin Ball (1808-1890) and his wife Eunice Selfridge (1811-1871) moved from New York to Winfield Township, DuPage County, Illinois in 1838. After Eunice's death, Alvin Ball moved to Sarpy County, Nebraska and sold the farm. The site is not eligible for inclusion on the NRHP (Bird 2013d).

**National Register Assessment of the Village of Weston (Bird 2013a)**

MARS drafted a NRHP evaluation of six buildings and one structure prior to proposed demolition of these seven historic properties (Bird 2013a). The former residential subdivision comprises the only part built within the planned community of Weston. The Village of Weston, incorporated in 1963, dissolved in 1968 with residences vacated in 1969. The current street layout within the Budget Homes section of the subdivision is nearly the same as on the 1964 plan with the exception of the street names. For example, what was "Delores Drive" is now "Potawatomi Boulevard." All of the 100 original residences within the subdivision measured 42 ft. by 25 ft. (1,050 sq. ft.) with the widest dimension fronting the street.

Since acquisition of Weston, Fermi has re-clad the residences with colorful, aluminum siding and adapted the units for individual and group housing, office space, laundry facilities, and storage, among other uses. Some units have substantial corrugated metal "pole" buildings attached to them or adjacent to them. Neither the Weston residences nor the Weston water tank[2] is eligible for inclusion on the NRHP.

**National Register Assessment of Farm Book 50 (Bird 2013b)**

MARS drafted a NRHP architectural assessment of the FB 50 (Elijah and Lydia Smith Farmstead [11-Du-564]) prior to proposed demolition of the barn and garage (Bird 2013b). The *circa* 1915-17 residence, the *circa* 1905 barn, and the twentieth century garage date to the M. Anthony and Katie Kames occupation (third occupation) of the farmstead. Kames built his residence on the preexisting residential foundation, and he may have built the 1905 barn with recycled timbers on a preexisting barn foundation as well. The diversified farm produced dairy, poultry, and grain. Neither the residence nor the outbuildings appear to be eligible for the National Register of Historic Places.

**Preliminary Overview of the Long-Baseline Neutrino Experiment (LBNE) on Cultural Resources (Bird 2013c)**

MARS reviewed documents relating to the potential effect of the Long-Baseline Neutrino Experiment (LBNE) on cultural resources (Bird 2013c). Review of the documents and CRM reports suggested that the proposed LBNE undertaking might adversely impact eleven known cultural resources (11-Du-36, 11-Du-551, 11-K-18, 11-K-19, 11-K-201, 11-K-202, 11-K-203, 11-K-1226, PS 71, PS 76, and Farmstead C).

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[2] The buildings and structure have been razed.

MARS did not relocate Potential Sites (PS) 71 and 76 or Farmstead C.[3] Sites 11-Du-36, 11-Du-551, 11-K-201, 11-K-202, 11-K-203, 11-K-1226 are not eligible for inclusion on the NRHP. MARS (Tolmie, Lurie, and Martinez 2013) tested the Tadpole (11-K-18) and Frog (11-K-19) sites in advance of LBNE construction. In summary, the LBNE construction project, as currently planned, will not adversely impact any significant historic properties.

**Testing Tadpole and Frog (Tolmie, Lurie, and Martinez 2013)**

MARS tested Tadpole (11-K-18) and Frog (11-K-19) during the Fall of 2012 in advance of construction associated with the LBNE (Tolmie, Lurie, and Martinez 2013). MARS marked the limits of Tadpole, including a buffer, prior to plowing the relict agricultural field. MARS recovered one biface and seven pieces of debitage from the surface but did not identify any features below the stripped plow zone (200 $m^2$).

While attempting to relocate Frog, MARS noted that the state site files located the site too far west. MARS completed a site correction form after review of the original documentation. After marking the real site location, MARS completed survey once the field had been plowed and rain-washed. MARS collected a utilized flake tool and three pieces of debitage from shovel probes (excavated prior to plowing) and four pieces of debitage from the surface (after plowing) but did not identify any features below the stripped plow zone (200 $m^2$). Neither site is eligible for inclusion on the NRHP.

**Evaluation of Historic Archaeological and Architectural Resources (Bird 2013d)**

From the time of the Fermilab's creation, archaeological and historical studies have been part of the laboratory's efforts to preserve the natural and cultural resources on the DOE's property. Beginning in 1968, historical studies have garnered general information from documents and oral histories, and provided an inventory of architectural resources on the new NAL (later Fermilab) property. Goals included public outreach to establish ties with local landowners and communities, and assessment of the architectural resources to plan how best to utilize these resources (demolition, adaptive reuse in place or relocated, or no change).

The 350 buildings and structures present on the parcel when the State of Illinois purchased the individual farms are at least 50 years old. From 3 March through 9 September 2013, MARS completed visual field reconnaissance of all historic properties (N=87) and conducted Phase I archaeological survey of 38 historic properties during the spring and summer of 2013 (Bird 2013d). MARS did not relocate 14 of the potential properties (PS 45, PS 51, PS 56, PS 60, PS 62, PS 66, PS 71, PS 74, PS 76, PS 77,

[3] MARS assigned PS numbers (Potential Site) to non-architectural historic sites noted in 1990 and assigned alphabet letters (Farmsteads A-F) to non-architectural historic sites noted in 2013.

Farmsteads B through D, and Farmstead F). MARS submitted 10 site correction forms (11-Du-37, 11-Du-215, 11-Du-216, 11-Du-218, 11-Du-220, 11-Du-221, 11-Du-223, 11-Du-224, 11-Du-225, and 11-K-206), two site revisit forms (11-Du-217 and 11-Du-219), and 61 new site forms (11-Du-551 through 11-Du-591 and 11-K-1226 through 11-K-1244). Thirteen sites within Fermi are within Pre-emption land patent parcels.

MARS developed a color-coded system (red, yellow, and green) to assist Fermi staff in retrieving NRHP status for each of the historic properties (see Table 2 of the CRMP). Summary locational information appears at the end of this appendix (Table 1).

### *Known Site Summaries*

**11-Du-35, Pohl Site**

Ann Early (1970:25-26, 65) identified, described, and recorded the 3.5-acre, multi-component site in Section 31 of Winfield Township (see Figure 1 in the CRMP). She recovered a "fair-density" scatter of Archaic Period and Upper Mississippian artifacts (N=122 lithics and a gunflint) on a knoll above a series of small marshes near the southern boundary of Fermilab (Section 31 of Winfield Township).

MARS tested the site in 1988 and recovered 34 chert flakes and 10 chert tools scattered over 6.4 acres with most artifacts concentrated in a 0.5-acre area on the west slope of the knoll (Jeske and Lurie 1988). Diagnostic artifacts included an Early to Middle Archaic point fragment and a Middle Archaic deep side-notched point fragment. MARS mechanically removed 400 $m^2$ of plow zone but did identify any features. The site is not eligible for inclusion on the NRHP.

**11-Du-36, Fox Site**

Ann Early (1970:27-28, 66) identified, described, and recorded the 2.1-acre multi-component site in Section 31 of Winfield Township. She recovered a "moderate-density" scatter of Archaic Period stone tools and Upper Mississippian stone tools and ceramic sherds from the surface along Butterfield Road (Section 31 of Winfield Township). In 1971 (Early 1971), she excavated six 5 ft. by 5 ft. test units on the site. The 35 pieces of chert debris and three tools recovered during testing were confined to the plow zone. The site is not eligible for inclusion on the NRHP.

**11-Du-37, Sauk Site**

Ann Early (1970:29, 67) identified, described, and recorded the 0.3-acre poorly defined Upper Mississippian site in Section 31 of Winfield Township. She collected a light scatter of lithic materials (46 pieces of chipping debris and 10 tools) from the west slope of a low hill covered in glacial till (Section 31 of Winfield Township)—including five whole or broken projectile points and two small triangular humpback knives. After

reviewing Early's data, examining a series of aerial photographs, and conducting a site visit, MARS redefined the site boundaries and submitted a site correction form in 2013. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-38, Gazebo Site**

Ann Early (1970:31-32, 69) identified, described, and recorded the 0.9-acre multi-component site in Section 30 of Winfield Township. The Gazebo site (160 m by 25 m according to Early) is located on a gentle slope north of a depression in the middle of the Tevatron accelerator ring (Section 30 of Winfield Township). While the depression is currently a pond, the 1949 USGS topographic quadrangle suggests that it was a linear, seasonal wetland on the divide between the Fox River and DuPage River drainage basins.

Early tested in site in 1971 (Early 1971:44-50) and MARS tested the site in 1988 (Lurie 1990). Early excavated five units (18.58 $m^2$) and retrieved artifacts from between 45 and 55 cm below the ground surface within the oak grove (four units) and from 20 cm below the base of the plow zone in one of the units placed within the relict agricultural field portion of the site. MARS excavated five units (16.25 $m^2$) with the majority of the artifacts recovered from between 20 and 30 cm below the ground surface—and some as deep as 40 cm. MARS also identified a feature, comprising fire-cracked rock, charcoal, and walnut shell fragments in Unit 8-Level 3. Based on the recovery of diagnostic projectile points and a calibrated radiocarbon assay (3,980-3,770 B. C.) on the walnut shell from the feature, Gazebo includes a major Archaic Middle Archaic component (Lurie, Kullen, and Demel 2009). A minor Upper Mississippian component defined by the recovery of a grit-tempered sherd and two or three diagnostic stone tools is also present. Given the distribution of artifacts after Phase II testing MARS refined the site boundaries (160 m by 40 m or 1.5 ac.).

Early underestimated the importance of the Gazebo site. Compared to sites in central and southern Illinois where Archaic Period sites are deeply buried, a depth of 45-55 cm may seem unimportant; however, unplowed Archaic Period sites in northeastern Illinois are rare. Gazebo seems to be a fairly substantial campsite and is eligible for the NRHP.

**11-Du-39, Wilson Site**

Early (1970:33, 70) identified the small (0.5 acre), single component Upper Mississippian Wilson site in Section 19 of Winfield Township. She recovered artifacts (N=30) from the west slope of a low knoll but thought that the site might continue into the adjacent oak grove. Diagnostic material included a broken triangular projectile point. In 1988 MARS, Inc. shovel tested the 10-acre "Buffalo Grove" bordering the Wilson Site and recovered one flake (Lurie 1990:4-5). MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-40, Mensing Site**

Ann Early (1970:35-37, 72) identified and recorded the Mensing site as a 2.4-acre single component site in Section 28 of Winfield Township. She mapped the lithic scatter on the crest and west slope of a low hill immediately east of ponds situated at the headwaters of Ferry Creek. She collected 194 chipped stone artifacts, including Archaic Period side-notched projectile points, and seven fire-cracked rocks. At the time of survey the site glacial till covered the slopes. This site has been heavily collected through the years (Lurie 1990:26). MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-41, Ferry Creek Site**

Ann Early (1970:39-41, 74) identified, recorded, and tested the 2.1-acre Ferry Creek Archaic Period site in Section 28 of Winfield Township. She mapped the "heavy" lithic scatter (N=625) on the top and sides of a knoll to the east of the Ferry Creek ponds. Tools included projectile points (primarily side-notched forms), scrapers, knives, drills, and hammerstones. Early (1971:51-53) conducted limited tested the site in 1971 with the excavation of three 5.0 ft. by 5.0 ft. units (6.96 $m^2$) and recovered 556 pieces of flaking debris (some of which may exhibit plow damage) from plow zone context only. Evidently Early believed that the site did not require further exploration and was not eligible for the NRHP. The site may be underwater (A. E. Sea) or at the water's edge (east shore) and grass-covered. The site is not eligible for inclusion on the NRHP.

**11-Du-156, Eola Site**

Early (1970:30, 68) identified the 3.7-acre single component Archaic Period Eola site in Section 32 of Winfield Township on slopes surrounding two small depressions (vernal ponds) near the intersection of Eola and Butterfield Roads. MARS relocated the site in 1989 and recorded it in 1991. Early described the density of cultural material as "thin" and points to collector depredation. She recovered 32 pieces of flaking debris, nine chipped stone tools (including three diagnostic projectile points), and one groundstone tool (hammerstone). Richard Nelson's collection included five hammerstones from the Eola site. The site is now planted in grass but should be tested if land use changes, as the NRHP eligibility remains undetermined.

**11-Du-157, Trust Site**

Early (1970:34, 71) identified the 2.1-acre single component Archaic Period site on the crest and west slope of a low hill in Section 29 of Winfield Township. She collected "a light scatter" of 71 pieces of flaking debris and seven chipped stone artifacts (including diagnostic projectile points).

MARS relocated the site in 1987 and recorded it in 1991. During testing by MARS in 1987, archaeologists walked the low hill three times under conditions of maximum

visibility and collected only a spurred unifacial chert scraper (possibly Paleoindian Period) and a Middle Archaic Period side-notched projectile point (Lurie and Jeske 1989:15-17). Re-examination of the points collected in 1970 by Early indicated that one appears to be a Dalton-like point fragment with an incurvate base and basal grinding and the other has a bifurcate base point—both dating to the late Paleoindian or Early Archaic time periods. Soil cores indicate that the site is very deflated. Although materials from this site may represent the oldest on Fermilab property, the low density of archaeological material and the lack of intact subsurface deposits make the site ineligible for the NRHP.

**11-Du-158, Brummel Site**

Early (1970:43, 76) identified the 1.1-acre Archaic Period Brummel site in Section 28 of Winfield Township on the east-facing slope of a knoll southeast of the Ferry Creek ponds. She recovered 11 tools (including a diagnostic projectile point) and 97 pieces of knapping debris. MARS recorded the site in 1989 following review of Early's 1970 report and the completion of collector interviews. The University of Illinois at Champaign-Urbana revisited the site in 2003 and collected six pieces of flaking debris according to the state site files. The site is currently within a natural area west of the southern pond of the A. E. Sea. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-159, Phillips Site**

Early (1970:38, 73) identified the 0.7-acre single component Archaic Period Phillips site in Section 19 of Winfield Township on the east slope of a small ridge. She recovered five tools (including diagnostic projectile points) and 35 pieces flaking debris from the surface of the site. Because of pending road construction, Early had the site re-plowed and made a second collection. She also excavated four units during testing but the size of the units is unknown. Testing recovered six additional projectile points (including two Fox Valley points)—all within the plow zone. The different point types collected suggest multiple occupations by Archaic Period groups. MARS recorded the site in 1989. The site is not eligible for inclusion on the NRHP.

**11-Du-160, Mack Site**

Early (1970:42, 75) identified the 0.7-acre Mack site in Section 28 of Winfield Township east of Ferry Creek on a gentle slope covered with glacial till. She recovered 10 tools and 65 pieces of flaking debris from the site. The tools include a small corner-notched point, two bifacially flaked knives made of non-local chert, and a large flake scraper of non-local chert. Based on similarities between the knife and scraper forms at the Mack site and at other Archaic sites on Fermilab (especially Ferry Creek) Early tentatively classified the Mack site as Archaic. MARS recorded the site in 1989. The site has not been tested, but given the amount of glacial till on the surface of the site, the

chance of finding intact deposits on the site is very low. The site is currently under water or at the water's edge (east bank of A. E. Sea) within a natural area. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-161, Anderson Site**

Early (1970:44, 77) identified the prehistoric Anderson site in Section 28 of Winfield Township on the crest and slopes of a small knoll west of Ferry Creek. She excavated three test units but concluded that the cultural material is wholly contained within the plow zone. The collection from the site includes seven tools and 59 pieces of flaking debris. MARS recorded the site in 1989. The site is not eligible for inclusion on the NRHP.

**11-Du-162, Garden North/Gregory/NAL-25 Site**

Robert Jeske (1987) discovered the low-density, 0.9-acre prehistoric Garden North site in 1986 within Section 21 of Winfield Township on a south-facing slope of a low knoll. He recovered a non-diagnostic bifacial tool fragment and six pieces of flaking debris. MARS tried to relocate the site as part of its testing program in 1987 but found no artifacts on the surface of the site (Lurie and Jeske 1989:30-32). Soil cores revealed no soil anomalies on this ephemeral site. The site is not eligible for inclusion on the NRHP.

**11-Du-163, Director's House/NAL-27 Site**

MARS (Lurie 1990:22, 26) identified and recorded the multi-component (Archaic, Mississippian, and Historic Euro-American) 11.6-acre Director's House site in Section 32 of Winfield Township based on collector interviews (Collector Area 38) and confirmed during fieldwork (Shaffer, Goldsmith, and Lurie 1993). The field containing the site remains in cultivation. Systematic pedestrian survey should be conducted on this field to refine the limits of the site. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-215, Lucius and Mary Bartholomew Farmstead (formerly A. C. Graves Site/PS 1)**

MARS (Shaffer, Goldsmith, and Lurie 1993:46-47, 94) recorded the 3.0-acre site in Section 29 of Winfield Township. MARS excavated two small units at the northeast and southwest corners of the probable residence foundation as well as a number of shovel probes and recovered mid-nineteenth century artifacts (ceramics, cut nails, butchered bone). Portions of the limestone residence foundation are visible on the surface. Other surface features include a trough, concrete pad, and a stone-lined well or cistern. L. [Lucius] Bartholomew is the owner of record on the 1862 Winfield Township plat. Review of the digital aerial photographs, previous investigations, and field

reconnaissance in 2013 (Bird 2013d:90-92) shows the farmstead buildings present as recently as 1939 but razed by 1946. Grass covered the site in 2013 although the limestone foundation remained exposed. MARS submitted a site correction form in 2013 to change the site name (noted above) and temporary site number (to Shaffer's PS 17 and PS 18). The site may be eligible for inclusion on the NRHP; therefore, Phase II testing is recommended. Since the area with the residence and outbuildings has never been plowed, units would need to be excavated by hand.

**11-Du-216, Ira and Eunice Woodman Farmstead**

MARS (Shaffer *et al* 1993:91) recorded the 0.8-acre Ira and Eunice Woodman Farmstead in Section 33 of Winfield Township. Woodman is the owner of record on the 1862 Winfield Township plat. Shaffer *et al* (1993) recovered a scatter of middle to late nineteenth century artifacts (ceramics, container glass, and brick fragments) within an agricultural field. MARS research completed in 2013 (Bird 2013d:3-4) discovered that Woodman received a Pre-emption land patent for the parcel in 1845. The National Archives files note that Ira Woodman, his wife, and six children built a residence on the parcel during September of 1837. Examination of the 1961 aerial photograph clearly shows that MARS (Shaffer *et al* 1993) collected artifacts from the green garden west of the farm buildings at FB 1 (Bird 2013d). Informal reconnaissance on 4 April 2013 noted the barn foundation and a rubble pile as well as container glass, brick, and concrete in the surrounding agricultural fields. MARS submitted a site correction form in 2013 that expands the site area to 2.4-acres and encompasses the buildings as depicted by DUSAF in 1968. The site has been severely disturbed by construction and is not eligible for inclusion on the NRHP.

**11-Du-217, Simpson Israel and Phoebe Brown Farmstead (formerly PS 13)**

MARS (Shaffer *et al* 1993:90) recorded the 0.5-acre Simpson Israel and Phoebe Brown Farmstead in Section 33 of Winfield Township. S. Brown is the owner of record on the 1862 plat. Simpson Israel Brown, his wife Phoebe, and their children arrived in Illinois about 1841 according to the census records. The family appears to be living at PS 13 during the 1850 and 1860 census enumeration; however, they do not appear there in 1870 (Bird 2013d:88-89). MARS recovered a scatter of historic artifacts (ceramics, container glass, personal, architectural, and miscellaneous) within an agricultural field. Examination of the 2013 aerials illustrates that the site comprises an agricultural field and the bordering open woods. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-218, Jeremiah and Jane Cromer Farmstead (formerly Fairbanks Farm Site/ Farm Book Site 3)**

MARS (Shaffer *et al* 1993) recorded this 5.6-acre site in Section 32 of Winfield Township. MARS recovered a scatter of historic artifacts (ceramics, container glass, architectural debris, farm-related fittings, and fauna) within an agricultural field and from shovel probes surrounding existing buildings and building remnants during the 1990 field investigations. Research conducted in 2013 (Bird 2013d:4-5) indicates that Jeremiah Jeremiah Cromer built the 1887 residence and barn on the site during the DUSAF evaluation. MARS submitted a site correction form in 2013 to change the name of the site. Examination of the current (2013) aerials illustrates that the site is grass-covered with some extant buildings, including a barn and water tower. Vandals burned the residence in 1968. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-219, Alvin and Eunice Ball Farmstead (East, FB 70) (formerly PS 41-42 Site)**

MARS (Shaffer *et al* 1993) identified and recorded the 1.9-acre site in Section 17 of Winfield Township. Site 11-Du-219 comprises two areas of settlement—a partially extant portion to the east (Ball Farmstead, later Joseph Lehman's Farm) and an archaeological scatter to the west (Samuel Lehman's Farm). Alvin Ball acquired the parcel from the Public Domain in 1838. After Eunice's death in 1871, Alvin Ball moved to Sarpy County, Nebraska and sold the farm to the Lehman Family. The old barn remains in place. In 1990, MARS collected scatter of historic and prehistoric artifacts (historic ceramics, glass, and metal; prehistoric flaking debris [n=8]) within an agricultural field between the two areas of settlement. MARS submitted a site correction form on 11 April 2012 to include the extant barn and a well found by a Fermi maintenance crew thereby increasing site dimensions to 9.1 acres (Bird 2012, Bird and Lurie 2013).

Field reconnaissance completed 28 March 2013 noted that a limestone foundation supports the gable barn and aluminum sliding clads the exterior of the building. MARS noted limestone fragments on the surface during shovel probe investigations near the former location of the residence on 6 August 2013 (East Area). Artifacts recovered from the probes included whiteware, stoneware, container glass, wire nails, a cut nail, a wood screw, and a brass disk. Pedestrian survey of the West Area on 3 September 2013 identified a sparse scatter of artifacts—ceramics, limestone, and a brick fragment. The site is not eligible for inclusion on the NRHP.

**11-Du-220, Robert and Jane Denham Farmstead (formerly PS 24 Site, also FB 45)**

MARS (Shaffer *et al* 1993:101) identified and recorded a 1.9-acre portion of the site in Section 30 of Winfield Township (within the main accelerator ring). Shovel probes excavated in 1990 recovered middle to late nineteenth century architectural and domestic

artifacts from 28 positive shovel probes excavated west of the driveway only. MARS expanded the site dimensions further east based on review of a series of aerial photographs and the previous research (Site Correction Form submitted 15 April 2013)—increasing the site to 3.1 acres.

R. Denham is the owner of record on the 1862 Winfield Township plat when the first buildings appear. Robert Denham and his wife Jane Plunknett of England acquired the parcel between 1843 and 1850. Examination of the 1993 Shaffer *et al* report, in light of the settlement history for FB 45, suggests that evidence for an earlier residence may be located within the revised site boundaries. Examination of the current aerials and a site visit illustrate that the site is grass-covered and wooded. MARS recommends Phase II testing to evaluate NRHP eligibility.

**11-Du-221, Gregory Site (formerly PS 43-64)**

Ann Early identified the prehistoric Gregory site as "DU-NA-10" in Section 21 of Winfield Township but did not include any description of the site in her 1970 report. Based on an examination of the artifacts, Lurie and Jeske (1989:9) described the nine tools (a possible Mississippian Period point, a Middle Woodland Period point, two broken bifaces, a crude biface, a broken/reworked biface, a retouched flake, and a utilized flake) and 15 unmodified chert flakes. MARS relocated the 1.2-acre site in 1990 and drew a sketch map showing the location of a serrated point and two flakes that mark the location of the Gregory Site. Gregory is not related to PS 43 as stated in Shaffer *et al* (1993:85); PS 43 (11-Du-591) is located further west (see Figure 1). MARS submitted a site correction form on 25 September 2013. MARS recommends Phase II testing to evaluate NRHP eligibility.

**11-Du-222, Isaac and Mahitable Reynolds Farmstead/PS 26**

MARS (Shaffer *et al* 1993:89) identified and recorded the 1.7-acre site on a knoll in Section 32 of Winfield Township. Artifacts collected in 1990 included a "modest quantity" of modern and mid-nineteenth century artifacts (ceramics, container glass, and metal fragments). R. S. [Richard Sargent] Reynolds is the owner of record on the 1862 Winfield Township plat, the only plat to depict a building at this location. Reynolds appears to be enumerated within the Isaac Reynolds household during the 1840 census. The 1850 and the 1860 census records lists three Reynolds households residing at the site—the Isaac and Mahitable household, the Richard and Juliet household, and the John and Emily Reynolds household. MARS conducted an informal pedestrian survey on 3 September 2013 to verify the site location and noted a sparse scatter of artifacts (ceramics, container glass, window glass, and a brick) on the crest of north slope of a low knoll (Bird 2013d:92-93). MARS recommends Phase II testing to evaluate NRHP eligibility.

**11-Du-223, Samuel and Lucy Bartholomew Farmstead (formerly White Farmstead Site/FB 58)**

MARS (Shaffer *et al* 1993:104-105) identified and recorded the 2.8-acre site in Section 32 of Winfield Township. MARS recovered mid-nineteenth century through late twentieth century artifacts (including nails, ceramics, container and window glass, brick fragments, and mortar) from opportunistic shovel probes excavated behind the residence. The pattern of artifact distribution indicated a lack of discrete activity areas. No sub-surface features were encountered.

Current research (Bird 2013d:60-61, 119-120, Appendix F) utilizing the digital archival material finds that although Jesse Graves purchased the parcel containing the site from the Public Domain, he lived elsewhere at the time. Samuel Bartholomew is the owner of record on the 1862 Winfield Township plat. The site is the oldest intact farmstead within Fermi. MARS submitted a site correction form on 10 September 2013 to change the name of the site from "White Farmstead" to the Samuel and Lucy Bartholomew Farmstead." The site is eligible for inclusion on the NRHP for its association with Leon M. Lederman, director at Fermilab from 1978 through 1989, founder of the Illinois Mathematics and Science Academy in 1986, and recipient of the Nobel Prize for Physics in 1987 (Criterion B) and for its information potential (Criterion D).

**11-Du-224, Russel and Julia Manville Farmstead**

MARS (Shaffer *et al* 1993:83-85) identified and recorded the 0.9-acre site in Section 20 of Winfield Township). Shovel probes excavated in the vicinity of the residence (razed) in by MARS 1990, yielded small quantities of artifacts, including some early to mid-nineteenth century items, and noted the location of a limestone well. Investigations completed by MARS in 2013 (Bird 2013d:61-62) increased the site size to 2.0 acres. MARS also re-positioned the site based on examination of a series of aerial photographs, a review of the 1968 DUSAF Plan, and re-examination of the Shaffer *et al* (1993) field notes (Site Correction Form dated 14 February 2013).

R. "Mandeville" is the owner of record on the 1862 Winfield Township plat. Manville probably acquired the parcel around 1848, the time of his marriage to Julia C. Smith. The historical documents present the landowner's name with various spellings; however, his grave marker reads "Russel Manville." MARS corrected the site name spelling on 10 September 2013. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-225, Daniel and Hannah Warne Farmstead**

MARS (Shaffer *et al* 1993:98) identified and recorded the 6.3-acre site in Section 29 of Winfield Township. Surface survey and shovel probes yielded an array of mid-nineteenth century artifacts (ceramics, container glass, and architectural fragments as well as other household and personal items) in the vicinity of the residence (razed) during the 1990 investigations. MARS observed and partially exposed a limestone well or cistern (filled with rocks).

The 1850 census and the 1862 plat place Daniel Stires Warne (1820-1900) and his wife Hannah Bartholomew (1828-1898) on the parcel. "On starting off in life for himself," (1844) Daniel purchased 90 acres in Section 29 of Winfield Township and erected a small, frame residence. Daniel built a second residence on the parcel about 1873. Fire destroyed the residence in 1960.

Review of the previous research as well as additional research completed by MARS in 2013 (Bird 2013d:51-54) suggested that the earlier Warne family frame residence might exist within the archaeological site. The site dimensions, as recorded in the site files, are much larger than described in the report and on the site form to include the outlying prehistoric artifacts. The Daniel and Hannah Warne Farmstead actually encompasses 1.2 acres only. MARS submitted a site correction form on 10 September 2013, and recommended Phase II testing of this grass-covered site to assess NRHP eligibility.

**11-Du-453, Pioneer Cemetery**

MARS identified and recorded the Pioneer Cemetery within Section 19 in Winfield Township, DuPage County, Illinois (Bird 1999). The cemetery is part of George Clinton Howe's Pre-emption purchase comprising FB 38. The parcel remained in the Howe family through at least 1874 according to the plat records. Apparently, burials ceased when title to the FB 39 parcel that included the family cemetery passed to Thomas Snow between 1874 and 1897. Known burials occurred in 1839 (n=1), 1846 (n=1), 1848 (n=1), 1850 (n=1), 1851 (n=3), and 1854 (n=1) according to the readable grave markers. Of the historical burials, four families are represented: Howe, Mead (includes Hubbard), Lindsay, and Benedict—all apparently near neighbors of the Howe family.

MARS, Inc. (Bird 1999) utilized a track backhoe in 1999 to investigate outside of and along the southern edge of Pioneer Cemetery for any possible burials so that Fermi could grant the founding director's request to be interred therein at the time of his death (HSRPA 99-117). Fermi buried Robert Rathbun Wilson (1914-2000) and his wife Jane Inez Scheyer within the cemetery's extended area in 2000 and 2006, respectively.

A volunteer visited the cemetery using a non-scientific dousing wire and suggested the presence of 100 graves. MARS recommended a scientific approach to identify the number of graves and spatial layout of the cemetery utilizing Ground Penetrating Radar (GPR). Any cemetery restoration work (cleaning, repairing, *etc.*) in an unregistered cemetery **requires** a permit from the IHPA.

**11-Du-524, John and Elizabeth Brummel Farmstead**

MARS identified and recorded the 2.6-acre site in Section 31 of Winfield Township (Bird 2011, Bird and Lurie 2012a, Bird 2013d:109-110). Artifacts recovered include ceramics, container glass, and limestone fragments in the vicinity of an open, stone-lined well within an agricultural field. Fermilab later capped the well. The 1874 plat shows J. [John] Brummel as the owner of the 43.87-acre farm while the 1904 plat shows Henry & Herman Brummel as owners of the 78.50-acre farm that encompasses 11-Du-524. MARS recommended Phase II testing to evaluate the site for NRHP eligibility.

**11-Du-551, John and Margaret Theis Farmstead**

MARS identified and recorded the 2.4-acre site in Section 31 of Winfield Township (Bird 2013d:8-9). German immigrants Johannes "John" and Margaret Kellen Theis settled at the site between 1870 and 1880 according to the census records. Their children, siblings Michael "Mike" Theis and Angeline "Angela" Theis built a second residence on the site—a dairy farm in 1910. The first residence, built between 1870 and 1880, had been razed prior 1968. The second residence has been moved multiple times within the Fermi landholdings.

Reconnaissance conducted on 4 April 2013 found that the site is heavily wooded (including buckthorn) and identified an open, limestone well, a limestone foundation marking the location of the residence, the barn foundation, and the silo. Fermilab subsequently capped the well. Demolition, infilling, and grading has severely impacted the site; therefore, the site is not eligible for inclusion on the NRHP.

**11-Du-552, William and Eliza Ainsworth Farmstead**

MARS identified and recorded the 1.1-acre site in Section 16 of Winfield Township (Bird 2013d:81-82). William Ainsworth purchased Lot 6 of Section 16 from the State of Illinois in 1842. Ainsworth is the owner of record on the 1862 and 1874 plats as well. Ainsworth and his family lived at the site from as early as 1840 through at least 1870. The plats note that William Ainsworth sold the farmstead to Wilbur D. Hawks between 1874 and 1897, probably following his first wife's death (1877) or about the time of his second marriage to Emmaline A. Williams on 6 July 1879.

Fermi moved the residence to 2 Sauk Circle although it is no longer extant at that location. Field reconnaissance completed in 2013 noted the wooded knoll being used as a brush dump; nonetheless, the crew noted a 15 m by 15 m limestone foundation marking the location of the barn. MARS excavated a single line of shovel probes through the area that once contained the residence and only noted a scatter of architectural debris. The site is not eligible for inclusion on the NRHP.

**11-Du-553, George and Louisa Pelham Farmstead**

MARS identified and recorded the 1.5-acre site in Section 17 of Winfield Township (Bird 2013d:73-75). Thomas Pelham is the owner of record on the 1874 Winfield Township plat; however a residence is also depicted on the 1862 plat without an owner indicated. Review of the plats and census records suggested that Thomas lived with his parents George and Louisa Pelham on a farm within Section 28 of Winfield Township in 1850. By 1860, the family had relocated to the farm in Section 17; therefore, George Pelham is probably the owner of 11-Du-553 in 1862. MARS excavated two transects of shovel probes across the former location of the residence in 2013. The remainder of the site contained landscaping debris, gravel piles, and dumped soil. The archaeologists collected only two artifacts, a porcelain sherd with decal decoration and a piece of colorless, press-molded container glass. The site is not eligible for inclusion on the NRHP.

**11-Du-554, Noah and Elizabeth Cooper Farmstead**

MARS identified the site in Section 17 of Winfield Township based on the collection of ceramics and container glass (primarily) from the surface only of the scrubby area but did not record the site in 1990 (Shaffer *et al* 1993:72). N. S. Cooper is the owner of record on the 1862 Winfield Township, the first to show a building at the site. Field reconnaissance completed in 2013 noted the 10 meter by 15 meter concrete foundation for the barn but no other surface features or artifacts (Bird 2013d:83-85). The site is not eligible for inclusion on the NRHP.

**11-Du-555, George Clinton and Harriet Howe Farmstead**

MARS identified and recorded the 3.3-acre site in Section 19 of Winfield Township (Bird 2013d:35-37). President James K. Polk issued a Pre-emption land patent to George Clinton Howe in 1845. The National Archives files note that George and his wife built their residence prior to September of 1835 and planted 8.0 acres of corn within Section 18 (to the north) to prove their pre-emption claim. J. B. Howe (brother) is the owner of record on the 1862 Winfield Township plat when the first building appears.

Fermi moved the two-story residence to 19 Sauk Circle. Field reconnaissance illustrates that the site comprises outbuildings, paved lots, and new buildings on Phillips

Farm Road (extension of drive off Old Batavia-Warrenville Road). The site is not eligible for inclusion on the NRHP.

**11-Du-556, Germain-Vandervolgan Farmstead**

MARS identified but did not record the 3.7-acre site in Section 19 of Winfield Township during the 1990 shovel probe investigations (Shaffer 1993:67). Walter Germain is the owner of record on the 1862 Winfield Township plat showing the first buildings on the parcel. His parents Stephen and Hannah Germain appear to be living on the site as early as 1850 (Bird 2013d:37-38). Shovel probe investigations completed in 2013 discovered that a large gravel parking lot covers the location of DUSAF's House 1 (*circa* 1940). Broken concrete rubble marks the western edge of DUSAF's House 2 (*circa* 1890). MARS alerted Fermilab about a partially filled, limestone-lined, beehive-shaped cistern. Fermi capped the cistern immediately following the county and state guidelines. The site is not eligible for inclusion on the NRHP.

**11-Du-557, Mary Taylor Farmstead**

MARS visually inspected the site during the 1990 field investigations (Shaffer *et al* 1993). Later MARS recorded the 0.7-acre site in Section 19 of Winfield Township (Bird 2013d:38-39). M. Taylor is the owner of record on the 1862 Winfield Township plat when buildings first appear on FB 41. Mary Taylor lived on or near the site during the 1860 through 1880 census enumeration. Reconnaissance completed in 2013 notes that road construction activities by Fermilab have adversely impacted the site. The site is not eligible for inclusion on the NRHP.

**11-Du-558, John and Theresa Feldott Farmstead**

MARS identified and recorded the 2.7-acre site in Section 19 of Winfield Township (Bird 2013d:39-40). John Feldott is the owner of record on the 1874 Winfield Township plat when a building first appears on the parcel; Mr. Howe owned the parcel as late as 1862. Field reconnaissance illustrates that the site was destroyed during construction of the Industrial Center Building. DUSAF's House 2 is now at 9 Sauk Circle. The site is not eligible for inclusion on the NRHP.

**11-Du-559, John and Elizabeth Kline Farmstead**

MARS identified and recorded the 0.4-acre site in Section 17 of Winfield Township (Bird 2013d:85). A residence is present within a small lot on the 1862 plat; however, the landowner is not identified. A review of the 1850 census records suggests that John and Elizabeth Kline reside on the site at that time. John Kline is the owner of record on the 1874 through 1904 plats. Fieldwork completed in 1990 (south of a *circa* 1950 residence) failed to recover any artifacts associated with the Kline occupation (Shaffer *et al* 1993:65). Field reconnaissance completed in 2013 by MARS did not discover any

surface features relating to the Mid-Century residence. The site is not eligible for inclusion on the NRHP.

**11-Du-560, Amos and Susan Rice Farmstead**

MARS identified and recorded the 1.2-acre site in Section 17 of Winfield Township (Bird 2013d:107-108). Amos L. Rice purchased two contiguous parcels from the Public Domain in 1843. Although he does not appear on the 1840 census rolls, Amos and his family appear to be living on the site during the 1850 census enumeration. MARS conducted field reconnaissance in 1990 and noted architectural debris, container glass, whiteware, stoneware, yellowware, a toy teacup, and a porcelain doll's limb on the site. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-561, John Winslow Farmstead**

MARS identified and recorded the 1.2-acre site in Section 19 of Winfield Township (Bird 2013d:45-46). John H. Winslow purchased the land from the Public Domain and may be present on the parcel during the 1840 census. Fermi moved the residence to 1 Sauk Circle. Field reconnaissance illustrates that the site is significantly disturbed by construction; only the modified barn-silo complex remains. The site is not eligible for inclusion on the NRHP.

**11-Du-562, Round Grove School House**

MARS identified and recorded the 0.4-acre site in Section 19 of Winfield Township (Bird 2013d:48). MARS excavated shovel probes in 1990 (east of the school house) but did not relocate the site (Shaffer *et al* 1993:106). Research utilizing the digital archival material (plats, aerials, and topographic quadrangles) found that the Round Grove School dates to as early as 1862 through at least 1961. The 1961 aerial shows both the school house and Leon Feldott's residence extant within the parcel. MARS excavated additional shovel probes in 2013 (surrounding the school house location) to relocate the Round Grove School but did not recover any artifacts. A water line and utilities buried within the ditch south of Old Batavia-Warrenville Road appears to have destroyed the school house. The site is not eligible for inclusion on the NRHP.

**11-Du-563, Sanford and Jennie Watson Farmstead**

MARS identified and recorded the 1.9-acre site in Section 19 of Winfield Township (Bird 2013d:69-71; Appendix F). B. B. Cornell is the owner of record on the 1862 plat. Although there is a building shown, no Cornell lived in Winfield Township during the 1860 or 1870 census enumeration. Sanford Watson (1838-1884) and his wife Jane "Jennie" Cooper are enumerated within Winfield Township during the 1870 and 1880 census. The family is clearly living at FB 65 during the 1880 enumeration. W. D. Hawks is the owner of record on the 1897 and 1904 Winfield Township plats. The

Fermi History and Archives project notes that Hawks remodeled the existing residence. Inspection of the interior of the barn suggests that Hawks also remodeled the existing barn between 1897 and 1900, extending the building and converting it from a grain barn to a dairy barn. Census records support this assertion. The archaeological component of the site is not eligible for inclusion on the NRHP; however, the barn is eligible for inclusion under Criterion C.

**11-Du-564, Elijah and Lydia Smith Farmstead**

MARS identified and recorded the 2.2-acre site in Section 20 of Winfield Township (Shaffer *et al* 1993, Bird 2013d:46-48). Elijah Smith purchased the parcel in 1844 but is not present in the county during the 1840 census although he is enumerated within his son Truman's household in 1850. Following Truman's death in 1859, his widow Elizabeth took up farming with the continued aid of farm laborer Thomas Sidwell of England according to the 1850 and 1860 census records. Elizabeth Smith is the owner of record on the 1862 Winfield Township plat as well. Elizabeth Smith did not reside in DuPage or Kane County during the 1870 census enumeration. MARS evaluated the site for the NRHP (Bird 2013b). The site is not eligible for inclusion on the NRHP.

**11-Du-565, Milo and Julia Ann Kemp Farmstead**

MARS identified and recorded the 2.2-acre site in Section 20 of Winfield Township (Bird 2013d:49-51). The United States issued a pre-emption land patent to Milo M. Kemp of New York in 1844. Milo, his wife, and their daughter lived on the parcel as early as 1840 according to the census records. The National Archives files note that the family built their residence prior to October of 1837. To prove the pre-emption status, the Kemp family planted 40.00 acres in corn, wheat, oats, and potatoes—all "under good fence." He farmed the land through at least 1850. The family moved to the village (Batavia) when Milo opened a hardware store there in 1855. MARS (Shaffer *et al* 1993:68) excavated shovel probes to the west of the site but did not recover any artifacts. The barn and silo are extant. Fermi moved the Kemp residence to 3 Sauk Circle. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-566, Vincent and Stephanie Ornatowski**

MARS identified and recorded the 1.3-acre site in Section 33 of Winfield Township (Bird 2013d:85-87). N. Melvin owned the parcel in 1926 but nobody with the surname Melvin lived in DuPage County during the 1910, 1920, or 1940 census enumeration. Vincent Ornatowski is the owner of record on the 1955 Winfield Township plat and in DUSAF. Vincent, who emigrated in 1910, lived in Chicago with his wife Stephanie during the 1930 and 1940 census enumerations. Apparently between 1940 and 1955, Ornatowski turned to farming in Winfield Township. Field reconnaissance in 2013 noted window glass, brick, and concrete within the agricultural field under the ComEd high-

tension lines. No buildings or structures remain and the site has been further impacted by construction of a pipeline. The site is not eligible for inclusion on the NRHP.

**11-Du-567, Erdmann Tenant Farm**

MARS identified and recorded the 0.2-acre site in Section 21 of Winfield Township (Bird 2013d:79-80). The residence dates to *circa* 1960-1961. Peter Erdmann owned the parcel at that time according to DUSAF. Reconnaissance completed in 2013 failed to locate any artifacts or structural remnants. The site is not eligible for inclusion on the NRHP.

**11-Du-568, Elmer H. Williams Farmstead**

MARS identified and recorded the site in 3.0-acre Section 21 of Winfield Township (Bird 2013d:82-83). Elmer H. Williams is the owner of record on the 1897 and 1904 Winfield Township plats although only the 1904 plat depicts buildings. The 1900 census rolls suggest that Elmer H. Williams, his wife, and their five children lived at the site in 1900. Reconnaissance completed in 2013, noted only a decorative pool. The site is not eligible for inclusion on the NRHP.

**11-Du-569, Samuel H. Warne Farmstead**

MARS identified and recorded the 4.9-acre site in Section 28 of Winfield Township (Bird 2013d:67-68). In 1990, MARS (Shaffer *et al* 1993:79) excavated shovel probes across the western portion of the site noted a depression (probably a pump house) and collected historic artifacts (architectural fragments and a spark plug) within a fallow agricultural field. A pipeline traverses the location of the pump house. Fermi converted the dairy barn to a meeting hall in 1970. Philo Carpenter is the owner of record on the 1862 and 1874 Winfield Township plats but did not reside on the parcel. Samuel H. Warne owned the parcel in 1904 and probably erected the residence that now forms the western end of Fermilab's Aspen East complex of buildings. The site is not eligible for inclusion on the NRHP.

**11-Du-570, William H. and Ellen Carpenter Farmstead**

MARS identified and recorded the site in Section 21 of Winfield Township (Bird 2013d:64-67). In 1990, MARS (Shaffer *et al* 1993:69) excavated shovel probes north of the extant buildings but did not recover any artifacts. William H. Carpenter built the residence around 1885-1910. William lived on the parcel through 1900. Between 1900 and 1904, Wm. H. Carpenter sold the parcel and moved to a farm in Elgin Township. A barn and smoke house (now garage) remain standing as well.

The United States issued a pre-emption land patent to Timothy Dewey Woodward in 1845 for the parcel. Review of the 1840 and 1850 census rolls suggests that Timothy D.

Woodward, his wife Rhoda, and their sons lived at the site beginning as early as 1839 through as least 1850. Since William D. Carpenter built the extant residence in 1885-1910, the archaeological remnants of the Woodward residence remain undiscovered on the pre-emption parcel. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-571, James Wilson Homestead**

MARS identified and recorded the 2.0-acre site in Section 20 of Winfield Township (Bird 2013d:63-64). MARS (Shaffer *et al* 1993:79) excavated shovel probes across the site in 1990, noted a small foundation, and recovered ceramics, nails, brick and plaster fragments. The United States issued a pre-emption land patent to James Norman Wilson in 1845. Wilson does not appear in the 1840, 1850, or subsequent census rolls within Winfield Township. However, the pre-emption files note that James, his wife, and one child settled on the parcel in November or December of 1839 and remained there through at least 4 May 1842. L. Hollister is the owner of record on the 1862 Winfield Township plat. Lucius Hollister and his wife Mary D. lived for several years in the Cleveland Ohio, prior to their *circa* 1849-1852 arrival in Illinois. Visual reconnaissance in 2013 illustrates that the site is grass-covered. Fermi moved the residence to 5 Sauk Circle. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-572, William and Minnie Giese Farmstead**

MARS identified and recorded the 2.7-acre site in Sections 17 and 20 of Winfield Township (Bird 2013d:71-72). William Carl Giese acquired the parcel in 1900. William married Wilhelmina "Minnie" Haut on 13 February 1881 in Prussia. They immigrated to the United States in 1882 where William worked for the railroad and then rented farms in Kane and DuPage counties for a number of years prior to purchasing the farm in Sections 17 and 20. William and Minnie built a corn crib in 1903, and dairy barn in 1904, a new brick house in 1905, and a granary in 1909. The farm remained in the family until obtained for Fermilab. The site is grassy and disturbed by construction. Reconnaissance completed by MARS in 2013 noted a small concrete pad but not other remaining surface features. Fermi moved the Giese's 1905 residence to the buffalo area where it remains. The site is not eligible for inclusion on the NRHP.

**11-Du-573, Henry and Margaret Giese Farmstead**

MARS identified and recorded the 1.9-acre site in Section 20 of Winfield Township (Bird 2013d:72-73, Appendix F). Wm. Giese is the owner of records on the first plat showing buildings—1955 while DUSAF records William's son Henry Giese, Jr. as the owner in 1968. Henry built the residence in 1915. The barn along with a shed and silo pad are extant at the site but the site is not eligible for inclusion on the NRHP.

**11-Du-574, Wilton and Elsie Lehman Farmstead**

MARS identified and recorded the 0.5-acre site in Section 20 of Winfield Township (Bird 2013d:75-76). DUSAF reports that Wilton Lehman built the residence on the site (now razed) in 1905, perhaps in preparation for married life. Wilton married Elsie Irene Erb in 1905. Wilton's parents owned the parcel previously. Visual reconnaissance conducted in 2013 identified the 5 meter by 5 meter concrete slab for the garage but found no evidence for the residence or shed. Phase I investigations conducted on later in 2013 noted a large area of gravel covering the eastern part of the site with mulch dumped elsewhere. Given the extensive disturbance associated with the post-1968 demolition, the site is not eligible for inclusion on the NRHP.

**11-Du-575, George McAuley Farmstead**

MARS identified and recorded the 2.5-acre site in Section 28 of Winfield Township (Bird 2013d:68-69). MARS recovered five artifacts during shovel probe excavation in 1990 (Shaffer *et al* 1993:79) and the base to a bottle in 2013. George McAuley is the owner of record on the 1862 and 1874 Winfield Township plats; however, George McAuley and his wife Mary Miller lived with their children in Section 8 of the township during the 1850-1870 census enumerations. The site is disturbed following 1968 demolition of the buildings on the site and is not eligible for inclusion on the NRHP.

**11-Du-576, W. H. Carpenter Bachelor Cabin**

MARS identified and recorded the 0.2-acre site in Section 28 of Winfield Township (Bird 2013d:87). Wm. H. Carpenter is the owner of record on the 1874 Winfield Township plat, the only plat to show a building at this location. Carpenter may have used this short-term location as his bachelor cabin prior to his marriage in 1872 to Ellen Pratt. Following his marriage, he and Ellen apparently lived elsewhere. MARS excavated shovel probes across the suspected site area in 2013, recovered a ceramic sherd, and observed limestone blocks in the road cut suggesting that construction of the artificial lakes, the Village of Weston, or road realignment, have destroyed the site. The site is not eligible for inclusion on the NRHP.

**11-Du-577, Amos C. and Mary A. Graves**

MARS identified and recorded the 4.5-acre site in Section 29 of Winfield Township (Bird 2013d:54-56). A. C. Graves is the owner of record on the 1862 Winfield Township plat although tenants occupied the residence in 1860. Daniel S. Warne purchased the A. C. Graves Farmstead to expand the Warne landholdings. DUSAF described the extant residence as built about 1940; however, while the Cape Cod style is consistent with the build date, the limestone foundation is not. It seems likely that the Cape Cod residence is built on the foundation of an earlier (*circa* 1850) residence erected by A. C. Graves.

MARS excavated shovel probes in 2013 and noted that while the residence is extant all probes yielded disturbed soils. The site is not eligible for inclusion on the NRHP.

**11-Du-578, Taylor S. and Harriet Warne Farmstead**

MARS identified and recorded the 4.6-acre site in Section 29 of Winfield Township (Bird 2013d:56-58). MARS (Shaffer *et al* 1993) excavated shovel probes northwest of the buildings in 1990 and recovered primarily twentieth century artifacts (brick fragments, nails, ceramics, and window glass). Taylor S. Warne purchased the parcel from the Public Domain in 1843. Warne is the owner of record on the 1862 Winfield Township plat as well. Two buildings are depicted on the 1874 plat only—one on either side of Eola Road. MARS excavated two transects of shovel probes on the low knoll that defines the PS 68 eastern portion of the site and recorded seven probes with 39 artifacts including container glass, stoneware, flat glass, nails, and lime-sand mortar. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-579, Phineas and Anna Graves Farmstead**

MARS identified and recorded the 0.4-acre site in Section 29 of Winfield Township (Bird 2013d:89-90). The United States issued a pre-emption land patent to Phineas Graves in 1843 for the parcel. Phineas settled in Sections 28 and 29 in 1835 with his wife and nine children. He built his residence in November of 1837 and had improved 10.0 acres—planted with wheat and oats. Phineas' son Amos C. Graves is the owner of record on the 1862 Winfield Township plat while Daniel S. Warne owned the parcel in 1874. The site has not been relocated; therefore, it is not eligible for inclusion on the NRHP.

**11-Du-580, Lucius Hollister Homestead**

MARS identified and recorded the 0.3-acre site in Section 29 of Winfield Township (Bird 2013d:98-99). Lucius Hollister (1806-1881) is the owner of record on the 1862 Winfield Township plat, the only plat to depict a building at this location. Lucius arrived in Illinois between 1852 and 1860. MARS excavated shovel probes across the site in 2013 and identified a 40 meter by 35 meter site containing whiteware, stoneware, window glass, machine cuts nails, and a brick fragment. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-581, Frederick and Albertine Pahnke Farmstead**

MARS identified and recorded the 1.9-acre site in Section 30 of Winfield Township (Bird 2013d:13-15). Frederick Pahnke is the owner of record on the 1897 Winfield Township plat and appears to be present on the parcel during the 1880 census enumeration although the 1904 plat is the first to depict buildings at the location. Reconnaissance completed in 2013 noted an extant barn (former dairy barn, now

remodeled and repurposed) and concrete slabs marking the location of the sheds but no visible signs of the residence. The site has been destroyed by construction and the extant barn has been modified. The site is not eligible for inclusion on the NRHP.

**11-Du-582, Lucius Hollister Homestead**

MARS identified and recorded the 0.7-acre site in Section 30 of Winfield Township (Bird 2013d:16-18). The first owner of record associated with a building on the parcel is G. Raddant (1904 plat). Since Raddant also owned the parcel in 1897, according to the plat that indicates ownership only, and he is on the parcel during the 1900 census enumeration but not during the 1880 census enumeration, he probably purchased the parcel between 1880 and 1897. MARS (Shaffer *et al* 1993) recovered window glass fragments from a single shovel probe and collected a sample of artifacts from the mound of debris near the residence's limestone foundation wall but did not record the site in 1990. Reconnaissance in 2013 illustrates that the site remains wooded. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-583, Marche Kennels**

MARS identified and recorded the 0.7-acre site in Section 30 of Winfield Township (Bird 2013d:18). R. J. W. is the owner of record when a building first appears on the parcel in 1964. Although DUSAF describes the property as a kennel, the clothes on a line strung between the residence and barn (DUSAF photograph) suggest that a family lived in the residence. The site is not eligible for inclusion on the NRHP.

**11-Du-584, George Holter Retirement House**

MARS identified the 0.2-acre site in Section 30 of Winfield Township (Bird 2013d:43-44). The site is the retirement home of widower George Holter that he carved out of his land holdings when his son-in-law Williams Hawks took over the operation of the family farm in the 1930s. MARS excavated shovel probes across the suspected site area in 2013 but did not uncover any cultural material. Both the residence and garage may have rested on slab foundations leaving little chance for subsurface features. The site is not eligible for inclusion on the NRHP.

**11-Du-585, John L. and Elizabeth Feldott Farmstead**

MARS identified and recorded the 0.9-acre site in Section 30 of Winfield Township (Bird 2013d:44-45). Eliz. Feldott is the owner of record on the 1955 Winfield Township plat when buildings first appear. However, farm buildings and an orchard are noted on the 1939 aerial photograph as well as on the 1932 U.S.G.S. quadrangle. MARS excavated two transects of shovel probes across the location of the former house and barn in 2013. The archaeologists noted a post-demolition burn pile near the barn and

uncovered two wire nails, one each near the house and barn locations but all probes showed evidence of disturbance. The site is not eligible for inclusion for the NRHP.

**11-Du-586, James and Anna Brown Farmstead**

MARS identified and recorded the 1.0-acre site in Section 31 of Winfield Township (Bird 2013d:7-8). The United States issued a pre-emption land patent to James Brown in 1843 for the SE ¼ of Section 31. The National Archives files note that James Brown, his wife, and four children built their residence in October of 1835. To prove his pre-emption Brown had also planted "nearly one acre" in potatoes, peas, and other garden vegetables. J. Brown also is the owner of record on the 1862 Winfield Township plat as well. Reconnaissance demonstrated that demolition of the farmstead buildings, infilling, and grading has severely impacted the site. The site is not eligible for inclusion on the NRHP.

**11-Du-587, Peter and Margaret Baumann Farmstead**

MARS identified and recorded the 1.8-acre site in Section 31 of Winfield Township (Bird 2013d:9-10). Peter Baumann is the owner of record on the 1955 Winfield Township plat but probably acquired the land around the time of his marriage in 1912 to Margaret Theis. The 1920 census records identify Peter as a dairy farmer living on the parcel with his wife and two children. The site is grass-covered with no extant buildings. MARS completed reconnaissance in 2013 and noted no visible signs of foundations—only an unassociated concrete slab. The site is not eligible for inclusion on the NRHP.

**11-Du-588, David and Sarah McKee Farmstead**

MARS identified and recorded the 1.5-acre site in Section 32 of Winfield Township (Bird 2013d:5-7). MARS (Shaffer *et al* 1993:Appendix 3:24-25) reported a limited assemblage (N=17) of domestic and architectural artifacts from shovel probes and from the surface of an agricultural field—all south of the buildings mapped by DUSAF. The United States issued a pre-emption land patent to David McKee in 1845. The National Archives files note that McKee, his wife, and four children built a residence on the parcel in January of 1836. McKee is the owner of record on the 1862 Winfield Township plat as well. Reconnaissance completed in 2013 relocated the limestone foundation for the residence and a depression marking the barn location. MARS recommends Phase II testing to assess NRHP eligibility.

**11-Du-589, James W. and Frances McKee Farmstead**

MARS identified and recorded the 2.2-acre site in Section 32 of Winfield Township (Bird 2013d:58-60). James Ward McKee married Frances L. Bird in 1860 and established his own residence. By 1880, the census records show James and Frances McKee definitely living on the site. DUSAF notes that James W. McKee built the

residence in 1889. Fermilab moved the residence to form part of the "Aspen East" building (east end of complex) in Fermi's village area. MARS noted an extant metal grain bin and the depression marking the original location of the residence. Limestone, brick, and concrete fragments litter the surface. MARS excavated shovel probes across the site in 2013 but all probes contained dense gravels and/or disturbed soils. The site is not eligible for inclusion on the NRHP.

**11-Du-590, T. B**.

MARS identified and recorded the 0.1-acre site in Section 32 of Winfield Township (Bird 2013d:87-88). T. B. is the owner of record of the 13-acre parcel on the 1862 Winfield Township plat. Review of the census records has not aided in the identification of this individual. MARS completed field reconnaissance in 2013 and noted no visible surface features. The site area is grass-covered with a power line and a buried fiber optic line immediately north of the site. MARS excavated shovel probes across the site as well and recovered a clenched cut nail and noted two pieces of undecorated whiteware at the northeast corner of the site. The site is not eligible for inclusion on the NRHP.

**11-Du-591, Jacob and Salome Wurtz Farmstead**

MARS identified and recorded the 1.5-acre site in Section 21 of Winfield Township (Bird 2013d:77-79). Buildings first appear on the 1862 plat although an owner is not identified. Research completed in 2013 suggests that the Wurtz family has occupied the site since 1851. Following the 1848-1849 revolutions in Germany, John Jacob "Jacob" Wurtz emigrated from Baden Germany in 1849 with his brother Christian Wurtz. After working in New York state for two years, the brothers sent for their parents, Johann Michael Wurtz and Susanna Katharina Pfieffer, and they all settled in DuPage County. MARS completed reconnaissance in 2013 and noted a 10 meter by 10 meter limestone foundation marking the location of the residence, the pad for the pump house and windmill west of the residence, and the 20 meter by 10 meter concrete foundation for the barn. MARS excavated two transects of shovel probes east of the house only (given the debris piles elsewhere) but did not recover any artifacts. The site is not eligible for inclusion on the NRHP.

**Village of Weston**

MARS identified and reviewed the former Village of Weston (dissolved in 1968) in Section 21 of Winfield Township (Bird 2013a, Bird 2013d:110-112). Westfield Construction Corporation built the subdivision in 1961 as part of a planned community. Westfield Corp. completed about 100 residences in Westfield Unit 1—only part of the entry-level "Budget Homes." Since acquisition of Weston, Fermilab has re-clad the residences with colorful, aluminum siding and adapted the units for individual and group housing, office space, laundry facilities, and storage, among other uses. Some units have

substantial corrugated metal "pole" buildings attached to them or adjacent to them. The newer, non-Weston buildings are identified with an address that includes an "A" following the street number. The former Village of Weston is not eligible for inclusion on the NRHP for a number of reasons: 1) The houses and the water tank within the defunct Village of Weston are part of a planned community that was never completed; 2) All residences are now clad with non-original aluminum siding in bright colors to meet the visual aesthetic of Fermi's first director; 3) Infill (pole buildings and shelter bunkers), additions, and connecting hyphens have adversely effected the feeling of the Mid-Century residential subdivision; and 4) Periodic flooding and adaptive re-use have adversely impacted the integrity of the buildings and structure (water tank).

**11-K-12, Runde Site (see 11-K-1255 below)**

**11-K-17, Fitzgerald Site**

Ann Early (1970:62, 88) identified and recorded the 1.4-acre Archaic Period site in Section 24 of Batavia Township. Fitzgerald is an upland site on formerly timbered landscapes situated west of Avenue B. Early recovered eight tools or tool fragments (including three side-notched points) from plowed field context. The field is now planted in prairie grass. MARS recommends Phase II testing to assess NRHP eligibility.

**11-K-18, Tadpole Site**

Ann Early (1970:59, 85) identified and recorded the 0.7-acre site in Section 25 of Batavia Township on the top and southwest slope of a small rise overlooking a wetland (west). Early recovered 10 tools (including three Archaic Period projectile points) and 221 pieces of flaking debris from the site. MARS flagged in 1991 to protect it from damage during construction of the Main Injector and tested the site in 2012 in advance of construction associated with the LBNE (Tolmie, Lurie, and Martinez 2013). MARS marked the limits of Tadpole, including a buffer, prior to plowing the relict agricultural field. MARS recovered one biface and seven pieces of debitage from the surface but did not identify any features below the plow zone. The site is not eligible for inclusion on the NRHP.

**11-K-19, Frog Site**

Ann Early (1970:58, 84) identified and recorded the 1.6-acre multi-component site on a low knoll in Section 25 of Batavia Township. Early recovered 13 artifacts and 198 pieces of flaking debris from the site. She assumed an Upper Mississippian component based on the presence of two small triangular points (which could date from the Late Woodland as well). The presence of an Archaic Period component is based on a plano-convex end scraper. MARS flagged the site in 1991 to protect it from damage during construction of the Main Injector and tested the site in 2012 in advance of construction

associated with the LBNE (Tolmie, Lurie, and Martinez 2013). MARS noted that the state site files located the site too far west and submitted a site correction form. MARS collected a utilized flake tool and seven pieces of debitage from the site but did not identify any features below the plow zone. The site is not eligible for inclusion on the NRHP.

**11-K-20, Bartelt Site**

Ann Early (1970:53, 83) identified and recorded the 8.8-acre multi-component site on a low ridge adjacent to a seasonal wetland in Section 24 of Batavia Township. Ann Early tested the site in 1971 (Early 1971:10-34). Materials recovered from the surface in 1970 included over 200 pieces of chipping debris, 61 tools, and 94 pottery sherds, most of which are Langford Tradition Upper Mississippian. The tools collected by Early and in the collection of the former property owner Roger Bartelt include Middle Woodland Snyders points, an Early Archaic lanceolate point, 11 triangular Mississippian triangular points, and four Middle to Late Archaic side-notched points.

Early confined testing to a 493 $m^2$ acre area at the top of the ridge, the area where she noted Langford Tradition ceramics. The 75 formal stone tools recovered during testing included projectile points (primarily small triangular points), unifacial scrapers, a variety of bifacial knives/scrapers, drills, and battered cobbles. In addition, she recovered 168 informal tools (retouched or used flakes), 39 cores, 2,669 flakes or flake fragments, 441 blocky chert fragments, and a bone tool with evidence of heavy use wear along the edges and a blunted tip. Over 1,450 Langford Tradition sherds were found during excavation—mostly undecorated body sherds (some trailed) and rim sherds typical for Langford Tradition vessels. Early described Bartelt as a small, Upper Mississippian, short-term campsite occupied by a family group with activities focused on flint knapping, hunting, and animal processing. The site is wholly confined to the plow zone and is not eligible for inclusion on the NRHP.

**11-K-21, Potawatomi Site**

Ann Early (1970: 52, 82) identified and recorded the 1.4-acre multi-component site in Section 24 of Batavia Township. Early recovered nine tools and 79 pieces of chert debris. She identified a Middle Woodland Period component (a circular scraper, a conical core, and a blade scraper) and a possible Archaic Period component (two contracting stem points occur at both Archaic and Woodland sites). Jeske (1986a) revisited the site and recovered two unhafted bifaces, three biface fragments, and 19 flakes. Middle Woodland sites in the uplands of northern Illinois are rare. MARS recommends Phase II testing to assess NRHP eligibility.

**11-K-22, Malone Site**

Ann Early (1970:50-51, 81) identified and recorded the 2.8-acre multi-component site on south-facing upland slopes in Section 24 of Batavia Township. She recovered stone tools (triangular points and a Middle Woodland expanding stem point), knapping debris, and Upper Mississippian Langford Tradition pottery sherds. Early (1971:34-40) tested the site in 1971. She excavated 13 units (92.9 $m^2$) where the ceramics were concentrated on the surface of the agricultural field. All but one unit yielded artifacts—all wholly contained within the plow zone. Six formal stone tools, 11 informal retouched and used flakes, eight cores, 494 flakes and flake fragments, and 177 blocky chert fragments make up the lithic assemblage. Among the formal tools are two triangular points, three scrapers, and an unidentifiable tool fragment. In addition 285 Langford Tradition sherds (including five decorated and seven rim sherds) were recovered. MARS recovered three prehistoric artifacts, a core, a deep side-notched Godar point, and a utilized flake from the west edge of Malone in 1990 (Bird and Lurie 1991). The site is not eligible for inclusion on the NRHP.

**11-K-23, Kautz Site**

Early (1970:48-49, 80) identified and recorded the 2.8-acre multi-component site (Middle to Late Archaic and Late Woodland/Mississippian periods) on a low knoll in Section 36 of Batavia Township. A small spring is located in a depression about 45 meters to the north. Early commented that the site might continue into an unplowed pasture area between the plowed field and the spring and that Kautz Road may have truncated the site on the east. She recovered 14 tools and 213 pieces of chert chipping debris with another 24 tools identified in local collections. Jeske (1986a) revisited the site in 1986 and conducted a shovel probe experiment. Jeske evaluated the efficacy of shovel probing at various intervals using trowelling and screening soils through ½-inch and ¼-inch mesh and in the process collected a small number of artifacts including a Late Archaic expanding stem point. All of the artifacts came from within 50 meters of Kautz Road.

In 1987 (Lurie and Jeske 1989) MARS collected 15 pieces of knapping debris and a biface fragment from the surface of the site; all but the biface fragment came from within 50 meters of Kautz Road. MARS also excavated shovel probes to the north and south of the site but not discover any additional artifacts. The site appears to be completely contained in a plowed field with cultural material restricted to the plow zone and has been heavily collected by Fermilab employees. MARS suggests that a better estimate of site size is 1.0 acre. The site is not eligible for inclusion on the NRHP.

**11-K-24, Pioneer Site**

Early (1970:46-47, 79) identified and recorded the 3.7-acre multi-component (Archaic through Historic) site on a low ridge east of Indian creek in Section 36 of Batavia Township. She collected 30 tools (including 12 projectile points) and 105 pieces of flaking debris. Among the projectile points are types that span the whole Archaic Period (Fox Valley, small side-notched, Merom), Late Archaic/Early Woodland stemmed points, Middle Woodland broad bladed corner-notched points, and Late Woodland/ Mississippian triangular points.

MARS revisited the site in the spring of 1988 and collected 66 pieces of flaking debris (Lurie and Jeske 1989). Soil cores excavated across the site indicated that the area is highly deflated and no subsoil anomalies were found. In all likelihood, all of the cultural debris is in the plow zone. In addition, the site has been heavily collected since 1970. After testing, MARS suggests that site size is 2.5 acres. The site is not eligible for inclusion on the NRHP.

**11-K-201 (APCH-1)**

MARS (Bird and Lurie 1991, Bird 2013d:15-16) identified and recorded the 3.5-acre multi-component site in Section 25 of Batavia Township. Artifacts recovered include 113 historic artifacts and 24 non-diagnostic prehistoric artifacts. MARS excavated two test units (2.0 $m^2$) but did not identify any features under the plow zone. The site may be associated with the Historic Period occupation at site 11-K-1229. Site 11-K-201 is not eligible for inclusion on the NRHP and has been destroyed.

**11-K-202 (APCH-2)**

MARS (Bird and Lurie 1991) identified and recorded the 2.5-acre multi-component site in Section 25 of Batavia Township. Artifacts recovered include 251 historic artifacts (primarily slag) and 18 prehistoric artifacts. Field school students excavated on unit (1.0 $m^2$) on the site but did not discover any cultural features under the plow zone. Site 11-K-202 was deemed ineligible for inclusion on the NRHP and has been destroyed.

**11-K-203 (APCH-3)**

MARS (Bird and Lurie 1991) identified and recorded the 3.1-acre multi-component site in Section 25 of Batavia Township. Artifacts recovered included 19 pieces of historic debris and 14 prehistoric artifacts including a possible Early Archaic Period Fox Valley point and a Middle Archaic Period Godar or Raddatz-like point. Field school students excavated one unit (1.0 $m^2$) on the site but did not discover any cultural features under the plow zone. Site 11-K-203 was deemed ineligible for inclusion on the NRHP and has been destroyed.

**11-K-204 (PSPR-B)**

MARS (Bird and Lurie 1991) identified and recorded the 6.7-acre multi-component site in Section 24 of Batavia Township. Field school students collected prehistoric (Archaic Period) and historic artifacts (a clay marble, a pipe stem, ceramics, glass fragments, and a cut nail) from the surface of an agricultural field now planted in prairie grasses. Diagnostic points included Brewerton Side-Notched, Kirk Corner-Notched, and Madison Side-Notched. MARS recommends Phase II testing to assess NRHP eligibility.

**11-K-205 (PSPR-C1)**

MARS (Bird and Lurie 1991) identified and recorded the 0.1-acre historic site along a tree line in Section 24 of Batavia Township. Aside from one piece of container glass and four brick fragments, MARS recovered only nineteenth and twentieth century ceramic sherds. Although the field school survey report suggests that this site is a dump, it may be an early, unmapped homestead site. The site is currently covered in prairie grass and protected. The site has not been tested to evaluate NRHP status.

**11-K-206, Shabbona Site**

Although Ann Early (1970:45, 78) identified the 0.2-acre site on the crest of a hill in Section 24 of Batavia, MARS recorded the site at a later date (Bird and Lurie 1991). Early did not recover any diagnostic artifacts (3 tools and 41 pieces of knapping debris). MARS walked the site with field school students under ideal field conditions and greatly expanded the areal extent of the site to 15.9 acres (Bird and Lurie 1991). The students collected both historic and prehistoric artifacts. Prehistoric artifacts included nine stone tools including a Jack's Reef point (Late Woodland), a Cahokia Side-notched point, and a Madison Triangular point (the latter two from the Mississippian Period), three chert cores, 58 pieces of knapping debris, and a small Langford Tradition body sherd (Mississippian Period). MARS, Inc. revised the site dimensions and submitted a site correction form on 28 August 2013 based on fieldwork (survey and limited testing) completed in 1990, review of the historical aerials, and field reconnaissance relating to site 11-K-1236. The 193 historic artifacts collected in 1990 included a clay marble, a ceramic pipe bowl fragment, ceramics, container glass, wire nails, and architectural material—all apparently associated with a barn on 11-K-1236 (see below) and no longer defined as part of 11-K-206. MARS excavated a test unit (1.0 $m^2$) within the prehistoric site 11-K-206 but the cultural material is wholly contained within the plow zone. The limited testing has not been adequate to evaluate the site for the NRHP. Phase II testing is recommended.

**11-K-207, Lorenz Site**

Ann Early identified but did not record the 1.4-acre prehistoric site on a gentle slope in Section 36 of Batavia Township, east of Indian Creek. She collected eight tools

(including two small triangular points) and 38 pieces of chipping debris. Jeske (1986a) collected a biface fragment from the surface in 1986. MARS (Lurie and Jeske 1989:17-19) recorded and tested the site 1987 but recovered very little cultural material (six flakes and a Middle Archaic side-notched point fragment, and a biface fragment). The Lorenz site has been heavily collected for many years. MARS also shovel probed the unplowed areas adjacent to the site but did not recover any additional artifacts. Based on collector information and testing, the site appears to be 3.5 acres in extent. The site is not eligible for inclusion on the NRHP.

**11-K-208, Avenue B Site/NAL-26**

MARS (Lurie 1990:7) identified and recorded the 2.4-acre prehistoric site in Section 24 of Batavia Township (south of Avenue B). The site also extends into Section 19 of Winfield Township. Density of the non-diagnostic cultural material is low (a tool and seven pieces of flaking debris), but the site has not been plowed. MARS recommends Phase II testing to assess NRHP eligibility.

**11-K-261, MARS 140-CFS15**

MARS identified and recorded the 9.9-acre multi-component site in Section 25 of Batavia following a series of collector interviews. Ann Early (1970) had collected two tool fragments and flaking debris from the site but considered the collection too diffuse to record as a site. One of the collectors had a biface adze from the area. Since site was endangered by construction of the Main Injector ring, MARS conducted a field reconnaissance in 1991 (Lurie 1991) and recovered eight artifacts including a Middle Archaic Morrow Mountain point and a Late WoodlandMississippian Period Madison point scattered over more than 6.3 acres in an eroded agricultural field. The site is not eligible for inclusion on the NRHP.

**11-K-274, Pioneer West**

MARS (Lurie and Jeske 1989) identified and recorded the 0.2-acre site in Section 36 of Batavia Township. MARS recovered nine flakes from the site (agricultural field). No soil anomalies were noted in the cores excavated on the site and no artifacts were recovered from shovel probes in the adjacent woods. The site is not eligible for inclusion on the NRHP.

**11-K-1226, Herman and Wilhelmina Schwahn Farmstead**

MARS (2013d:21-22) identified and recorded the 3.8-acre historic site in Section 25 of Batavia Township. MARS (Shaffer *et al* 1993:80-81) excavated a series of shovel probes around the foundation of the 1919 residence in 1991 but did not record the site. MARS, excavated additional shovel probes during Phase II investigations at 11-K-19 (Tolmie, Lurie, and Martinez 2013). MARS recovered artifacts from only two shovel

probes—a piece of window glass and a fragment of undecorated whiteware. Surface features included clusters of architectural debris.

Fermilab moved the stucco residence to 7 Sauk Circle and the Upright-and-Wing residence to 16 Sauk Circle. Fermilab razed the residence at 16 Sauk Circle in 1984. Herman Schwahn and his wife Wilhelmina Groener emigrated from Germany in 1868, purchased the parcel, and built the Upright-and-Wing residence. Their son Clemens built the stucco residence shortly after his marriage in 1918. The site is not eligible for inclusion on the NRHP.

**11-K-1227, Peter and Mary Rausch Farmstead**

MARS (2013d:10-11) identified and recorded the 3.4-acre historic site in Section 36 of Batavia Township. Peter Rausch is the owner of record on the 1874 Winfield Township plat. Peter and Mary Rausch, natives of Luxemburg, lived in Batavia Township with their children as early as 1870. Site reconnaissance completed in 2013 found that the site is disturbed by post-1968 demolition. The site is not eligible for inclusion on the NRHP.

**11-K-1228, Jesse and Eliza Graves Farmstead (aka PS 61, FB 15)**

MARS (Shaffer *et al* 1993:77) identified but did not record site PS 61 in 1990. Fermi razed all buildings prior to 1990. The archaeologists noted a concrete pad (garage location), a well pit (possible windmill location), and the concrete-capped limestone foundation of a ramped barn with the ramp on the west façade and a concrete pad for a lean-to on the east. The United States issued a pre-emption land patent to Jesse Graves in 1843 for the parcel. The National Archives files note that Jesse Graves, his wife, and child completed a "log dwelling house" with household furniture on 19 October 1841. Ira Woodman is the owner of the site on the 1862 Batavia Township plat. MARS (Bird 2013d:11-13) recorded the 1.6-acre site in Section 36 of Batavia Township. The portion of the site formerly containing the residence, garage, and northernmost crib (a grain bin) has been destroyed by construction of the injector ring and Indian Creek Road. The site is not eligible for inclusion on the NRHP.

**11-K-1229, John and Bridget Carr Farmstead**

MARS (Bird 2013d:14-16) identified and recorded the 2.6-acre historic site in Section 25 of Batavia Township. The United States issued a pre-emption land patent for the parcel to John Carr in 1844. The National Archives files note that John Carr and his wife built a residence in March of 1842. Carr also had plowed 0.25 acres and planted an unspecified crop, which he enclosed with a fence, as part of his pre-emption improvements. Witness and neighbor James Norman Wilson deposed that the residence held furniture in May of 1842. Reconnaissance in 2013 and examination of the current

aerials show that construction has destroyed the site. It is not eligible for inclusion on the NRHP.

**11-K-1230, Fred and Eliza Fenske Farmstead**

MARS (Bird 2013d:18-20) identified and recorded the 1.1-acre historic site in Section 25 of Batavia Township. Fermi moved the two residences on the site to the Village (8 and 13 Sauk Circle). The Fenske family lived on the site as early as 1880. The site has been destroyed by road realignment and construction of the injector ring. It is not eligible for inclusion on the NRHP.

**11-K-1231, William and Etta Trantow Farmstead**

MARS (Bird 2013d:20-21) identified and recorded the 0.7-acre historic site in Section 25 of Batavia Township. William Tronto (Trantow) is the owner of record when a building first appears—on the 1872 Batavia Township plat. MARS excavated shovel probes across the site in 2013. The probes uncovered a buried layer of dense gravel, a concrete slab, and 37 artifacts (including container glass, window glass, a wire nail, coal, and slag). The site is disturbed and not eligible for inclusion on the NRHP.

**11-K-1232, Charles and Emilie Giese Farmstead**

MARS (Bird 2013d:22-23) identified and recorded the 0.9-acre historic site in Section 25 of Batavia Township. Charles "Carl" Giese is the owner of record on the 1892 Batavia Township plat when a building first appears on the parcel. Katz and Martinez did not discover any visible surface features during the 2013 reconnaissance. MARS noted extensive disturbance during the shovel probe investigations in 2013—large mounds of rubble up to 1.0 m in height full of gravel, building debris, and metal. The site is not eligible for inclusion on the NRHP.

**11-K-1233, Spear-Griffith Farmstead**

MARS (Bird 2013d:34-35) identified and recorded the 1.7-acre historic site in Section 24 of Batavia Township. The United States issued a pre-emption land patent to Andrew Spear in 1843 for the parcel. The Fermilab History and Archives Project notes that Ed and Mary Griffith built the residence, described by DUSAF and now at 5 Sauk Circle, between 1885 and 1890. MARS noted a small, intact portion of the driveway during the 2013 reconnaissance. Subsequent shovel probe investigations of the site area recovered some coal slag and a wire nail in the western part of the site as well as window glass near the former location of the garage. MARS also noted disturbed soils in the former location of the residence and barn. The site is not eligible for inclusion on the NRHP.

**11-K-1234, E. Griffith Tenant Farmstead**

MARS (Bird 2013d:33-34) identified and recorded the 0.6-acre historic site in Section 24 of Batavia Township. DUSAF suggests that a *circa* 1900 1.5-story residence on the site originally housed a hired man and his family, the first "negro" family in the area. The E. Griffith Estate is the owner of record when the first buildings appear on the 1904 Batavia Township plat. MARS did not discover any surface features during the 2013 reconnaissance but excavated a single line of shovel probes across the site. Demolition activities and road construction have severely disturbed site 11-K-1234. The site is not eligible for inclusion on the NRHP.

**11-K-1235, Buelter School**

MARS (Bird 2013d:26-28) identified and recorded the 0.7-acre historic site in Section 24 of Batavia Township. MARS (Shaffer *et al* 1993:70) excavated four transects of six shovel probes immediately west of the site in 1990 but did not recover any cultural material. The parcel held the Buelter School from *circa* 1892 until consolidated about 1950. MARS excavated four transects of shovel probes across the site as well as two opportunistic probes just south of the site in 2013 and recovered school-related artifacts. MARS recommends Phase II testing to assess NRHP eligibility.

**11-K-1236, Hill Farmstead-Malone Farm**

MARS (Bird 2013d:28-30) identified and recorded the 1.4-acre historic site in Section 24 of Batavia Township. Bird and Lurie (1991:24) noted the concentrated nature of the historic scatter recovered within the agricultural portion of the site (68 ceramics, one glass fragment, and four brick fragments) within the agricultural field. MARS also excavated 35 shovel probes (15 positive) within the wooded projection to the north. L. or I. Hill is the owner of record when the first building appears on the 1860 Batavia Township plat. Frank Malone purchased the farm, including an old house with cistern, an old barn, and an old silo, in 1936. The residence, now at 6 Sauk Circle, may date to the initial settlement of the parcel; however, the brick barn post-dates 1936. MARS noted signs of habitation including a metal swing set in the woods and a bird feeder but no other surface features during the 2013 investigations. The site is not eligible for inclusion on the NRHP.

**11-K-1237, Elijah S. and Hannah E. Town Farmstead**

MARS (Bird 2013d:30) identified and recorded the 1.7-acre historic site in Section 24 of Batavia Township. E. S. Town is the owner of record when FB 32 buildings first appear on the 1872 Batavia Township plat. MARS noted a rubble pile and concrete pads during the 2013 reconnaissance but no positive shovel probes. The site is not eligible for inclusion on the NRHP.

**11-K-1238, Cliff and Helen Anderson Residence**

MARS (Bird 2013d:31-32) identified and recorded the 0.2-acre historic site in Section 24 of Batavia Township. The 1954 plat shows a small subdivision of three lots south of Wilson Street near the county line. Della Bartelt gave her daughter Helen and son-in-law Cliff Anderson the parcel on which they built their home in 1948. MARS did not identify any surface features during the 2013 reconnaissance. The site is not eligible for inclusion on the NRHP.

**11-K-1239, Everett and Elaine Kraft Residence**

MARS (Bird 2013d:32) identified and recorded the 0.5-acre historic site in Section 24 of Batavia Township. DUSAF notes Everett W. Kraft as the owner of a home on Batavia Road with a *circa* 1947 residence (manufactured home) and a garage. MARS did not identify any surface features during the 2013 reconnaissance. The site is not eligible for inclusion on the NRHP.

**11-K-1240, George Tincknell Residence**

MARS (Bird 2013d:32-33) identified and recorded the 0.2-acre historic site in Section 24 of Batavia Township. DUSAF notes George Tincknell as the owner of a *circa* 1960 one-story residence on Batavia Road. MARS did not identify any surface features during the 2013 reconnaissance. The site is not eligible for inclusion on the NRHP.

**11-K-1241, Meywell Acres**

MARS (Bird 2013d:25-26, Appendix F) identified and recorded the 2.7-acre historic site in Section 24 of Batavia Township. According to a review of the documents (1939 aerial photograph, 1940 census, blueprints dated 24 March 1939), Bernard D. Wellman, his wife Mary C. (nèe Meyer), his daughter Marilouise Wellman, and his widowed mother-in-law Christina (nèe Thimmel) Meyer comprised the first residents. Five Fermilab directors and a visiting theoretical physicist have lived at Meywell Acres (FB 29) since Fermi acquired the property from Vincent Mullins. The site is eligible for inclusion on the NRHP under Criteria B and C. The building retains its integrity and is unusually extravagant for the location and period (Depression Era).

**11-K-1242, John and Mary Wygnat Farmstead**

MARS (Bird 2013d:23-14) identified and recorded the 3.0-acre historic site in Section 24 of Batavia Township. J. D. Wygant is the owner of record on the 1860 Batavia Township plat when a building first appears. MARS in 2013 noted part of a limestone foundation. Shovel probes excavated west of the limestone foundation revealed extensive disturbance associated with demolition of the site. The site is not eligible for inclusion on the NRHP.

**11-K-1243, Spear Farmstead**

MARS (Bird 2013d:94) identified and recorded the 1.9-acre historic site in Section 24 of Batavia Township. Andrew and Lucinda Spear transferred ownership of the site to their son Warren R. Spear and his wife Matilda Griffith as early as 1862. Field reconnaissance conducted in 2013 noted historic artifacts within the agricultural field but no surface features within the grass-covered knoll where the buildings once stood. MARS noted container glass, nails, and limestone architectural debris in the vicinity of the house location during shovel probes excavated in 2013. The crew did not uncover any intact features or deposits. The site is not eligible for inclusion on the NRHP.

**11-K-1244, Andrew and Lucinda Spear Cabin**

MARS (Bird 2013d:104) identified and recorded the 0.6-acre historic site in Section 24 of Batavia Township. The United States issued a pre-emption land patent to Andrew Spear in 1843 for the parcel. The National Archives files note that Spear settled on the site in June of 1834 with his wife and five children. Field reconnaissance identified one wall of the limestone foundation for the residence on a grass-covered knoll and a heavy concentration of historical artifacts within the agricultural field. MARS also excavated shovel probes (two transects at 10 m intervals) across the knoll in 2013 but did not recover any artifacts. MARS recommends Phase II testing to assess NRHP eligibility.

**11-K-1255 (formerly 11-K-12), Runde Site**

Ann Early (1970:61, 87) identified this prehistoric site in Section 25 of Batavia Township after examining of Austin Runde's artifact collection (35 projectile points and a ¾-grooved axe. This Archaic Period site extended along the east bank of Indian Creek. The size of the site is unknown. In 1970, the site was under the main parking lot and construction area for the acceleration facilities. In 1988, MARS placed shovel probes along the creek to the south of the probable site area, but did not recover any cultural material. MARS recorded the site as 11-K-1255 in 2014 after discovering a mapping error in the state site files. The site appears to be completely destroyed and is not eligible for inclusion on the NRHP.

Table 1. Summary information for location of sites within Fermilab.

| **County**/site number | Section | **UTM: NAD 27** | | **UTM: NAD 83** | |
|---|---|---|---|---|---|
| | | Northing | Easting | Northing | Easting |
| **DuPage County** | | | | | |
| 11-Du-35 | 31 | 4630826 | 396123 | 4630541 | 395608 |
| 11-Du-36 | 31 | 4630161 | 395692 | 4630187 | 395642 |
| 11-Du-37 | 31 | 4630141 | 396256 | 4630319 | 396204 |
| 11-Du-38 | 30 | 4631857 | 396115 | 4631839 | 395770 |
| 11-Du-39 | 19 | 4633324 | 396554 | 4633399 | 396490 |
| 11-Du-40 | 28 | 4632126 | 399032 | 4632344 | 399051 |
| 11-Du-41 | 28 | 4632208 | 399132 | 4632192 | 399004 |
| 11-Du-156 | 32 | 4630350 | 397700 | 4630586 | 397628 |
| 11-Du-157 | 29 | 4632540 | 396980 | 4632733 | 396958 |
| 11-Du-158 | 28 | 4631320 | 398840 | 4631516 | 398817 |
| 11-Du-159 | 19 | 4632720 | 396660 | 4632952 | 396623 |
| 11-Du-160 | 28 | 4632320 | 398860 | 4632551 | 398854 |
| 11-Du-161 | 28 | 4632500 | 398620 | 4632720 | 398598 |
| 11-Du-162 | 21 | 4634140 | 399230 | 4634364 | 399241 |
| 11-Du-163 | 32 | 4630850 | 397900 | 4630974 | 397953 |
| 11-Du-215 | 29 | 4631608 | 397245 | 4631737 | 397237 |
| 11-Du-216 | 33 | 4630445 | 398878 | 4630619 | 398912 |
| 11-Du-217 | 33 | 4630400 | 398366 | 4630603 | 398365 |
| 11-Du-218 | 32 | 4630391 | 397844 | 4630594 | 397820 |
| 11-Du-219 | 17 | 4634341 | 398093 | 4634589 | 398145 |
| 11-Du-220 | 30 | 4631842 | 396072 | 4632085 | 396088 |
| 11-Du-221 | 21 | 4634278 | 398613 | 4634498 | 398752 |
| 11-Du-222 | 32 | 4631028 | 397997 | 4631239 | 397974 |
| 11-Du-223 | 32 | 4630964 | 397649 | 4631170 | 397620 |
| 11-Du-224 | 20 | 4632982 | 397488 | 4633172 | 397522 |
| 11-Du-225 | 29 | 4632308 | 397253 | 4632436 | 397250 |
| 11-Du-453 | 19 | 4633616 | 395767 | 4633830 | 395765 |
| 11-Du-524 | 31 | 4630274 | 395371 | 4630488 | 395380 |
| 11-Du-551 | 31 | 4630032 | 395803 | 4630249 | 395809 |
| 11-Du-552 | 16 | 4634376 | 399127 | 4634574 | 399110 |
| 11-Du-553 | 17 | 4634348 | 397605 | 4634555 | 397566 |
| 11-Du-554 | 17 | 4634947 | 396877 | 4635160 | 396838 |
| 11-Du-555 | 19 | 4633446 | 395382 | 4633710 | 395359 |
| 11-Du-556 | 19 | 4633706 | 395812 | 4633890 | 395772 |
| 11-Du-557 | 19 | 4633214 | 396216 | 4633402 | 396198 |
| 11-Du-558 | 19 | 4632740 | 396273 | 4632973 | 396236 |
| 11-Du-559 | 17 | 4634729 | 396858 | 4635003 | 396815 |
| 11-Du-560 | 17 | 4634831 | 396861 | 4635047 | 396826 |
| 11-Du-561 | 19 | 4633704 | 396505 | 4633920 | 396454 |
| 11-Du-562 | 19 | 4633441 | 396761 | 4633640 | 396742 |

Table 1. Summary information for location of sites within Fermilab, continued.

| **County**/site number | Section | **UTM: NAD 27** | | **UTM: NAD 83** | |
|---|---|---|---|---|---|
| | | Northing | Easting | Northing | Easting |
| 11-Du-563 | 19 | 4634000 | 395470 | 4634245 | 395468 |
| 11-Du-564 | 20 | 4633540 | 396835 | 4633733 | 396816 |
| 11-Du-565 | 20 | 4633278 | 396964 | 4633495 | 396953 |
| 11-Du-566 | 33 | 4630773 | 399189 | 4630982 | 399178 |
| 11-Du-567 | 21 | 4634286 | 398856 | 4634503 | 398818 |
| 11-Du-568 | 21 | 4634245 | 399288 | 4634490 | 399261 |
| 11-Du-569 | 21, 28 | 4632704 | 398509 | 4632905 | 398494 |
| 11-Du-570 | 28 | 4632476 | 398486 | 4632688 | 398467 |
| 11-Du-571 | 20 | 4632880 | 398049 | 4633067 | 398030 |
| 11-Du-572 | 20 | 4634305 | 397079 | 4634517 | 397082 |
| 11-Du-573 | 20 | 4634262 | 397323 | 4634477 | 397290 |
| 11-Du-574 | 20 | 4634272 | 398206 | 4634477 | 398171 |
| 11-Du-575 | 28 | 4632247 | 399008 | 4632473 | 398968 |
| 11-Du-576 | 28 | 4632464 | 398710 | 4632704 | 398696 |
| 11-Du-577 | 29 | 4631843 | 397222 | 4632060 | 397227 |
| 11-Du-578 | 29 | 4631156 | 397456 | 4631360 | 397438 |
| 11-Du-579 | 29 | 4631850 | 397343 | 4632080 | 397313 |
| 11-Du-580 | 29 | 4632621 | 398367 | 4632868 | 398323 |
| 11-Du-581 | 30 | 4631264 | 395198 | 4631511 | 395210 |
| 11-Du-582 | 30 | 4631603 | 395205 | 4631842 | 395178 |
| 11-Du-583 | 30 | 4631769 | 395216 | 4631993 | 395180 |
| 11-Du-584 | 30 | 4631868 | 395921 | 4632087 | 395911 |
| 11-Du-585 | 30 | 4631850 | 395687 | 4632073 | 395700 |
| 11-Du-586 | 31 | 4630124 | 396305 | 4630322 | 396259 |
| 11-Du-587 | 31 | 4630192 | 395188 | 4630432 | 395170 |
| 11-Du-588 | 32 | 4630600 | 396838 | 4630819 | 396814 |
| 11-Du-589 | 32 | 4630902 | 397492 | 4631133 | 397459 |
| 11-Du-590 | 32 | 4630419 | 397726 | 4630654 | 397718 |
| 11-Du-591 | 21 | 4634258 | 398459 | 4634497 | 398443 |
| **Kane County** | | | | | |
| 11-K-17 | 24 | 4630400 | 395050 | 4633755 | 394918 |
| 11-K-18 | 25 | 4631850 | 394450 | 4632085 | 394454 |
| 11-K-19 | 25 | 4632000 | 394250 | 4632193 | 394323 |
| 11-K-20 | 24 | 4633380 | 394850 | 4633556 | 394839 |
| 11-K-21 | 24 | 4633140 | 394820 | 4633358 | 394774 |
| 11-K-22 | 24 | 4633080 | 394650 | 4633299 | 394612 |
| 11-K-23 | 36 | 4630110 | 395080 | 4630347 | 395086 |
| 11-K-24 | 36 | 4630400 | 395050 | 4630628 | 395005 |
| 11-K-201 | 25 | 4631650 | 394900 | 4631896 | 394948 |

Table 1. Summary information for location of sites within Fermilab, concluded.

| **County**/site number | Section | **UTM: NAD 27** | | **UTM: NAD 83** | |
|---|---|---|---|---|---|
| | | Northing | Easting | Northing | Easting |
| 11-K-202 | 25 | 4631704 | 394820 | 4631943 | 394853 |
| 11-K-203 | 25 | 4631620 | 394500 | 4631801 | 394547 |
| 11-K-204 | 24 | 4632740 | 394270 | 4632908 | 394209 |
| 11-K-205 | 24 | 4633040 | 393240 | 4633235 | 394219 |
| 11-K-206 | 24 | 4633130 | 394420 | 4633306 | 394452 |
| 11-K-207 | 25, 36 | 4631050 | 394620 | 4631253 | 394602 |
| 11-K-208 | 24, 19 | 4633250 | 395200 | 4633495 | 395189 |
| 11-K-261 | 25 | 4631551 | 394135 | 4631740 | 394144 |
| 11-K-274 | 36 | 4630250 | 394950 | 4630430 | 394919 |
| 11-K-1226 | 25 | 4631863 | 394223 | 4632055 | 394229 |
| 11-K-1227 | 36 | 4630236 | 394992 | 4630411 | 395074 |
| 11-K-1228 | 36 | 4630642 | 395004 | 4630815 | 395028 |
| 11-K-1229 | 25 | 4631406 | 394993 | 4631644 | 394985 |
| 11-K-1230 | 25 | 4632034 | 395039 | 4632257 | 395035 |
| 11-K-1231 | 25 | 4632510 | 394269 | 4632738 | 394246 |
| 11-K-1232 | 25 | 4632080 | 394188 | 4632294 | 394112 |
| 11-K-1233 | 24 | 4633815 | 395140 | 4633998 | 395149 |
| 11-K-1234 | 24 | 4633740 | 394961 | 4633997 | 394965 |
| 11-K-1235 | 24 | 4634052 | 394708 | 4634293 | 394678 |
| 11-K-1236 | 24 | 4633166 | 394397 | 4633383 | 394429 |
| 11-K-1237 | 24 | 4634046 | 394873 | 4634268 | 394852 |
| 11-K-1238 | 24 | 4634054 | 395017 | 4634288 | 394999 |
| 11-K-1239 | 24 | 4633960 | 395015 | 4634149 | 394986 |
| 11-K-1240 | 24 | 4633897 | 395007 | 4634118 | 394987 |
| 11-K-1241 | 24 | 4633446 | 394248 | 4633675 | 394233 |
| 11-K-1242 | 24 | 4633626 | 393934 | 4633883 | 393899 |
| 11-K-1243 | 24 | 4634202 | 394515 | 4634422 | 394501 |
| 11-K-1244 | 24 | 4634150 | 395069 | 4634368 | 395056 |
| 11-K-1255 | 25, 19, 30 | 4632412 | 395101 | 4632672 | 395160 |

## Appendix E: Forms

Shovel Probe Form
Search Probe Form
Illinois Archaeological Site Recording Form
Illinois Archaeological Site Correction Form
IHPA Short Form
Unit Excavation Form
Feature Excavation Form
Field Check-In Form
Cultural Material Tabulation (Prehistoric)
Historic Artifact Inventory Form (Historic)
Lab Materials Control Form
Biweekly Time Sheet
U.S. DOE Faciltites Information Management System Complete Building Report

Shovel Probe Form

Project_____ #_____

Site _____

Prober _____ Date _____

Datum _____

Interval 5m 10m 15m m screened troweled

Transect #_____Direction_____>_____

Color code

| | |
|---|---|
| black= | 1 |
| very dark brown= | 2 |
| dark brown= | 3 |
| brown, light brown= | 4 |
| yellow brown= | 5 |
| dark grey, light grey= | 6 |
| other= | 7 |

| | Zone 1 | | | Zone 2 | | | Zone 3/Comments | | |
|---|---|---|---|---|---|---|---|---|---|
| Probe # | Color | Depth | Inc. | Color | Depth | Inc. | Color | Depth | Inc. |
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Search Probe Form

Project name _____

MARS # _____

Site/Area _____

Transect # _____ Probe # _____

Prober _____ Date _____

Interval (circle one) 1m 2m 3m 4m 5m

(#) Positive probe

Ø Negetive probe

○ Unexcavated

**(Flag all hot probes!!!)**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5N5W | 5N4W | 5N3W | 5N2W | 5N1W | 5N | 5N1E | 5N2E | 5N3E | 5N4E | 5N5E |
| 4N5W | 4N4W | 4N3W | 4N2W | 4N1W | 4N | 4N1E | 4N2E | 4N3E | 4N4E | 4N5E |
| 3N5W | 3N4W | 3N3W | 3N2W | 3N1W | 3N | 3N1E | 3N2E | 3N4E | 3N3E | 3N5N |
| 2N5W | 2N4W | 2N3W | 2N2W | 2N1W | 2N | 2N1E | 2N2E | 2N3E | 2N4E | 2N5E |
| 1N5W | 1N4W | 1N3W | 1N2W | 1N1W | 1N | 1N1E | 1N2E | 1N3E | 1N4E | 1N5E |
| 5W | 4W | 3W | 2W | 1W | T___P___ | 1E | 2E | 3E | 4E | 5E |
| 1S5W | 1S4W | 1S3W | 1S2W | 1S1W | 1S | 1S1E | 1S2E | 1S3E | 1S4E | 1S5E |
| 2S5W | 2S4W | 2S3W | 2S2W | 2S1W | 2S | 2S1E | 2S2E | 2S3E | 2S4E | 2S5E |
| 3S5W | 3S4W | 3S3W | 3S2W | 3S1W | 3S | 3S1E | 3S2E | 3S3E | 3S4E | 3S5E |
| 4S5W | 4S4W | 4S3W | 4S2W | 4S1W | 4S | 4S1E | 4S2E | 4S3E | 4S4E | 4S5E |
| 5S5W | 5S4W | 5S3W | 5S2W | 5S1W | 5S | 5S1E | 5S2E | 5S3E | 5S4E | 5S5E |

# ILLINOIS ARCHAEOLOGICAL SITE RECORDING FORM

County:
Site Name:
Field No.:
Quadrangle:

State site number:
Date recorded:
Revisit:

LEGAL DESCRIPTION (to quarter quarter quarter section)

| | | | | |
|---|---|---|---|---|
| Align: | 1/4s: | Section: | Township: | Range: |
| Align: | 1/4s: | Section: | Township: | Range: |
| Align: | 1/4s: | Section: | Township: | Range: |
| Align: | 1/4s: | Section: | Township: | Range: |

UTM Coordinates (to be provided by ISM): UTM Zone: UTM East: UTM North:

Ownership:

ENVIRONMENT

Topography (Lake Michigan Beach, Island, Floodplain, Terrace, Bluffbase, Bluffslope Bluff crest, Upland Ridge, Upland Closed Depression, or Other Upland):

Nearest Water Supply: Drainage : Elev. (meters AMSL):

Soil Association:

Description:

SURVEY

Project name: Surface visibility: Site Area (sq. meters):

Ground Cover (List up to 3: Bare, Cultivated, No Till, Stubble, Forest, Brush, Weeds, Grass, Paved, Rock, Water, Other):

Survey Methods (List up to 2: Pedestrian, Shovel Test, Core, Auger, Machinery, or Remote):

Site Type (List up to 2: Habitation, Mound, Cemetery, Commercial, Isolated Find, Other, Unknown):

Standing Structure (Y/N):

SITE CONDITION

Extent of Damage (None, Moderate, Severe, Destroyed, Unknown):

Main Cause of Damage (Erosion, Agriculture, Development, Vandalism):

MATERIALS OBSERVED

No. of Prehistoric Artifacts (count or estimate):

Prehistoric Diagnostic Artifacts:

Prehistoric Surface Features:

Description:

No. of Historic Artifacts (count or estimate):

Historic Diagnostic Artifacts:

Historic Surface Features:

TEMPORAL AFFILIATION (Y if present)

| | | | |
|---|---|---|---|
| Prehistoric: | Late Archaic: | Mississippian: | Colonial (1673-1780): |
| PaleoIndian: | Woodland: | Upper Mississippian: | Pioneer (1781-1840): |
| Archaic: | Early Woodland: | Protohistoric: | Frontier (1841-1870): |
| Early Archaic: | Middle Woodland: | Historic Native Amer.: | Early Industrial (1871-1900): |
| Middle Archaic: | Late Woodland: | Historic: | Urban Industrial ((1901-45): |
| | | | Post War (1946-Present): |

Description:

Surveyor: Institution: Survey Date: Curation:

Site Report By: Institution: Report Date:

IHPA Log No.: IHPA 1st Sur Doc No.:

Compliance Status: NRHP Listing:

Illinois Archaeological Site Correction Form
(List all information here as listed on original form)

IAS No.

Inst. No.

Site Name:

County:

Location 1/4s:

Sec. Twp. Range

Quadrangle:

UTM E
N

Site reported by:

Correction and/or Additional Data:

New Data Reported By:

Date:

ARCHAEOLOGICAL SURVEY SHORT REPORT
Illinois Historic Preservation Agency
Old State Capitol Building
Springfield, Illinois 62701 (217) 785-4997

IHPA Use Only (Form ASSR____) Reviewer: _____
date: _____
_____ accepted ____ rejected

IHPA Log # _____

mars#: _____

LOCATIONAL INFORMATION AND SURVEY CONDITIONS

County: _____ Quadrangle _____

ProjectType/Title:

_____

_____

Funding and/or Permitting Federal/State Agencies: _____

Sec. _____ T. _____ R. _____ Natural Division (No.)

_____ _____

U. T. M. _____

Project Description:

_____

_____

Topography: _____

Soils: _____

Drainage: _____

Land Use/Ground Cover (include % visibility):

_____

_____

Survey Limitations: _____

ARCHAEOLOGICAL AND HISTORICAL INFORMATION

Historic Plats/Atlases/Sources:

_____

Previously Reported Sites:

_____

PreviousSurveys:

_____

_____

Regional ArchaeologistContacted: _____

Investigation Techniques:

_____ Time
_____ Expended _____
_____

Sites/Find SpotsLocated: _____

Cultural Material:

_____ (curated at) _____

Collection Techniques:

_____

_____

_____

Area Surveyed (Acres and Square Meters): _____

MARS #: _____



RESULTS OF INVESTIGATION AND RECOMMENDATIONS:

☐ Phase I archaeological reconnaissance has located no archaeological material; project clearance is recommended.

☐ Phase I archaeological reconnaissance has located archaeological materials; site(s) does(do) not meet requirements for National Register eligibility; project clearance is recommended.

☐ Phase I archaeological reconnaissance has located archaeological materials; site(s) may meet requirements for National Register eligibility; further testing is recommended.

☐ Phase II archaeological investigation has indicated that site(s) does(do) not meet requirements for National Register eligibility; project clearance is recommended.

☐ Phase II archaeological investigation has indicated that site(s) meet requirements for National Register eligibility; formal report is pending and a determination of eligibility is recommended.

Comments:

CONTRACTOR INFORMATION:

Arch. Contractor: Midwest Archaeological Research Services, Inc.

Address/phone: 505 N. State Street, Marengo, Illinois 60152 815/568-0680

Surveyor(s): _____ Survey date(s): _____

Report completed by: _____ date: _____

Submitted by (signature and title): _____

ATTACHMENT CHECK LIST: #1 Through #4 are mandatory:

☐ 1) Relevant portion of USGS 7.5" topographic quadrangle map(s) showing project location and any recorded sites;

☐ 2) Project map(s) depicting survey limits and, when applicable, approximate site limits and concentrations of cultural material;

☐ 3) site form(s): two copies of each form);

☐ 4) all relevant project correspondence;

☐ 5) additional information sheets as necessary.

Address of contracting agency to whom SHPO comment should be mailed:

Contact Person: Phone #

Reviewers comments:

Sheet _____ of _____

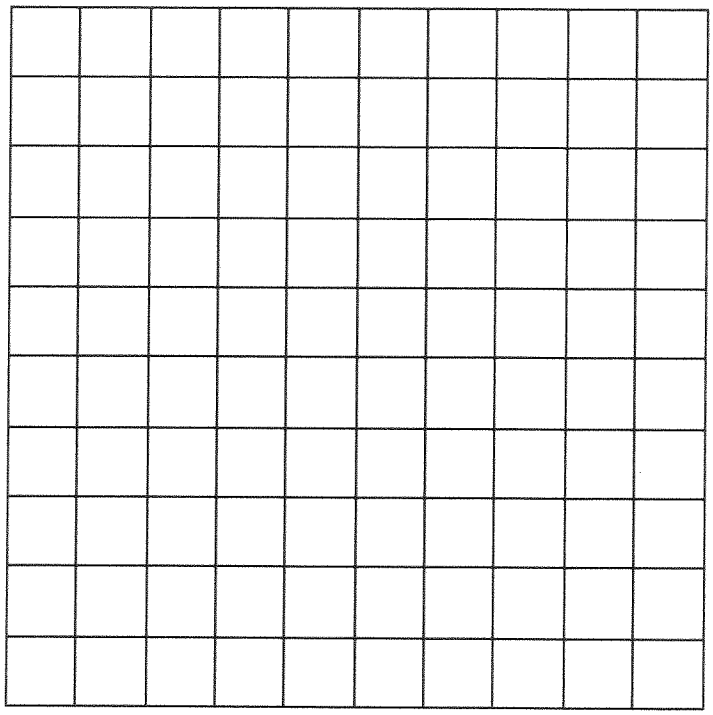
**MARS #**_____ **Site #**_____ **Unit #**_____ **Level** _____
**Date:**_____ **Excavators:**_____ **Datum** _____
**Unit Dimension: 1x1 m 1x2 m 0.5x0.5 m 0.5x1.0 m other**_____

Top
Base

Top
Base

**N**

**Scale**



**Key**

_____
_____
_____
_____
_____
_____

Top
Base

Top
Base

**Excavation procedure:**
Level: Nat Cult Arb Thickness: _____cm
Technique: Shovel Trowel Other Screening: Wet Dry Mesh size_____

**Describe**

_____
_____
_____
_____
_____
_____

**Artifacts Recovered:**

**PREHISTORIC:**

**Tools** (count/estimate) _____

**Ceramics** (count/estimate) _____

**Lithics** (count/estimate) _____

**Other** (count/estimate) _____

**Fauna** (count/estimate) _____

**HISTORICS:**

**Ceramics** (count/estimate) _____

**Glass** (count/estimate) _____

**Metal** (count/estimate) _____

**Other** (count/estimate) _____

Describe Distribution_____

_____

_____

_____

_____

**Soils**

Munsell:_____ wet dry Texture: _____ Horizon:_____

% non-soil frags: _____ What type? _____ Disturbances?_____

Mottles (color, size, distribution, type):_____

Plasticity:_____ Stickiness: _____Grain size:_____

Describe soil: _____

_____

_____

_____

Flotation sample taken? Y/N Location:_____

Other samples taken? Y/N Type? _____

# Artifact bags: _____

Photographs taken? Y/N

BW/Color Prints Camera # _____ Roll _____ Frame ____Describe_____

Slide Camera # _____ Roll _____ Frame ____ Describe_____

Digital Camera # _____ Folder ____ Frame ____ Describe _____

**Level and/or Unit Interpretations:**

_____

_____

_____

_____

_____

_____

_____

Extra sheet attached? Y/N Describe_____

Page 1: Feature Plan view

MARS #_____ Site #_____ Feature #_____ Recorded by_____

Scale: 1 cm=_____

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ALL WEATHER WRITING PAPER
No. 1140
2MM GRID
J L DARLING CORP
www.RiteintheRain.co

**MARS #**_____**Site #**_____ **Feature #**_____ **N S E W 1/2 Entire**
**Level** _____ **OR Zone** _____ **Datum** _____
**Date:**_____ **Excavators:**_____

**Excavation procedure:**
Level: Nat Cult Arb Thickness: _____cm
Technique: Shovel Trowel Other Screening: Wet Dry Mesh size_____
**Describe**

_____
_____
_____
_____
_____

**Artifacts Recovered:** (mark artifact concentrations/piece plots on plan view on reverse)
**Tools** (count/estimate) _____ **Lithics** (count/estimate) _____
**Ceramics** (count/estimate) _____ **Historic** (count/estimate) _____
**Fauna** (count/estimate) _____ **Other** (count/estimate) _____
# Artifact bags: _____
Describe distibution etc._____
_____
_____
_____
_____
_____

**Soils/Sediments** (mark areas of different sediments on plan view map on reverse)
Munsell:_____ wet dry Texture: _____ % coarse frags: ____
Munsell:_____ wet dry Texture: _____ % coarse frags: ____
Munsell:_____ wet dry Texture: _____ % coarse frags: ____
Disturbances? _____
Mottles (describe color, distribution, etc.):_____
Describe_____
_____
_____
_____
_____
_____

Samples taken? Y/N If not, why not?_____

Soil _____ Other _____

_____ _____

_____ _____

Photographs taken? Y/N

BW/Color Prints Camera # _____ Roll _____ Frame ____ Describe_____

Slide Camera # _____ Roll _____ Frame ____ Describe _____

Digital Disk # _____ Frame_____

**Level/Zone Description and Interpretation:**

_____

_____

_____

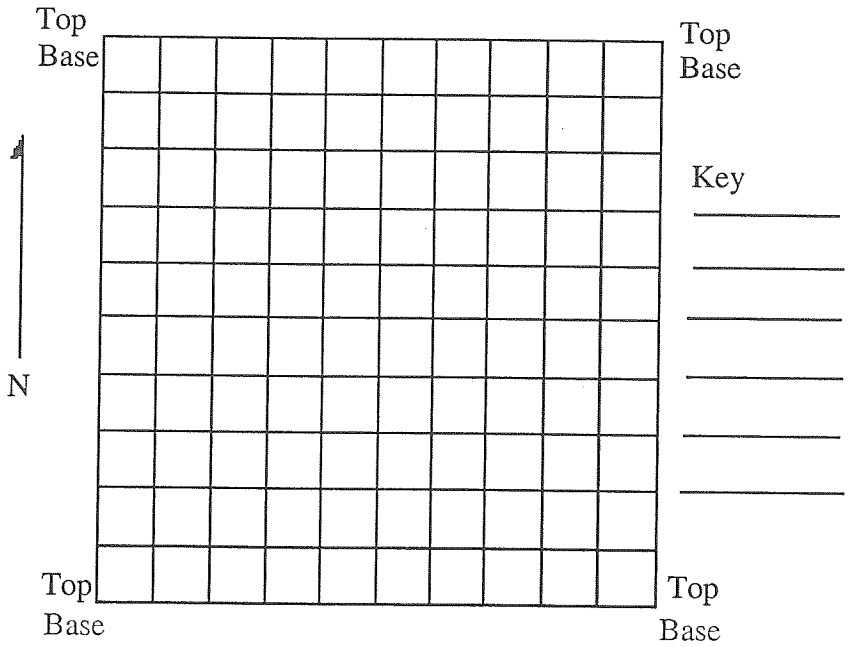
_____

_____

_____

_____

Plan view, base of level/zone_____




Scale: 1 square=_____ cm

Extra sheet attached? Y/N Describe _____

**Last Page: Feature Profiles**

**MARS #_____Site #_____ Feature #_____ Recorded by_____**

**Scale: 1 cm=_____**

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Midwest Archaeological Research Services, Inc.
Field Check-in Form

Site: _____
Date: _____

| Provenience | Debris Bag | Flot | Soil | C14 | Other | Collector | Field Number |
|---|---|---|---|---|---|---|---|
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Cat. #

# Cultural Material Tabulation (Prehistoric)

Unit # | Level | Quad | Area

Feature # | Part

Other Prov.

Collectors | Coll. Date

Recorder | Rec. Date

Modified Chipped Stone Artifacts

| | Number | Description |
|---|---|---|
| Hafted Biface | | |
| Biface | | |
| Uniface | | |
| Retouch | | |
| Utilized | | |
| Fragment | | |
| Other | | |

Modified Groundstone #

| Debris | Number | Weight | heat treated | Burned | Cortex |
|---|---|---|---|---|---|
| Cores | | | | | |
| Flakes | | | | | |
| Chunks | | | | | |

FCR # | FCR wt.

Manuport #

Sherd # | Sherd wt.

Bone # | Bone wt.

Flora # | Flora wt.

Historic

Comments

# PHASE I – IN FIELD HISTORIC SITE INVENTORY SHEET

**MARS Project #**_____ **Date** _____
**Site #** _____ **Surveyor(s)** _____
**Site Name** _____ **Site Area** _____

**GPS Coordinates** **E** _____
**N** _____

Historic artifact scatters in plow zone contexts:

1. Flag all cultural material.
2. Photograph site. Photo should show distribution of flags and how site is situated on the landscape.
3. Collect the following items (bring into the lab):
   - all decorated ceramics that are large enough to further identify in the lab
   - all base, neck/rim, and marked body sherds of container glass that can be further identified in lab
   - any personal items (e.g., pipes, buttons, coins, marbles) that can be further identified in the lab
   - anything unusual, cool, and/or unidentifiable
   - anything with a maker's mark, patent info., etc. that can be further identified in the lab
   - some hardware (if unusual and you think it could help identify site function)
4. Do Not Collect, instead count the following items:

Ceramics:

Creamware: Und. _____ Hand Painted _____ Transfer _____ Lustre _____
Pearlware: Und. _____ Hand Painted _____ Transfer _____ Shell-edge _____
Lustre _____
Whiteware/
Ironstone: Und. _____ Shell-edge _____ Transfer _____ Decal _____
Molded _____ Hand painted _____ Annular _____ Sponge _____
Flow Blue _____ Poly transfer _____ Cut Sponge Stamp _____
Porcelain: Und. _____ Molded _____ Transfer _____ Decal _____
Yellowware: Und. _____ Rockingham _____ Mocha _____ Annular _____
Redware: Und. _____ Glazed _____
Stoneware: Hand-made _____ Molded _____ Salt-glazed _____
Other (describe) _____

Container Glass (unmarked body sherds):

Clear (colorless) _____
Aqua _____ Turquoise _____ Green _____ Olive _____
Cobalt _____ Lt. Blue _____ Lt. Green _____ White _____
Amethyst _____ Amber _____ Brown _____
Other (describe) _____

Personal Items: _____
Other Household: _____

Architectural Debris:
Brick _____
Limestone _____
Fieldstone _____
Window glass _____
Machine cut nails _____
Wire nails _____

Miscellaneous:
Iron can fragments _____
Unident. iron frags _____
Other (describe) _____
Hardware: _____
Other (describe): _____

**Total Artifacts**: _____

5. Note any concentrations of artifacts (especially architectural debris) on site sketch map.
6. Pull flags, but leave uncollected artifacts in place.

Historic artifacts found in shovel probe contexts:
Above list still applies. Note on shovel probe form the type and quantity of artifacts not collected from a particular probe. Bag all others by transect and probe provenience.

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## Lab Materials Control

Site _____ Program _____

Unit _____ Feature _____

Profile Trench _____ TSP _____

| Provenience | Date | Debris Bag # | Flot Bag # | Other | Debris W | Debris S | Flots D | Flots F | Other Proc. |
|---|---|---|---|---|---|---|---|---|---|
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**Midwest Archaeological Research Services, Inc.**
**Biweekly Time Sheet**

**Name:** _____ **Period ending:**_____
**Project-MARS #**_____
_____
_____
_____

| | Day of week | Month/day | Start-End | Hours-# (task) | Mileage |
|---|---|---|---|---|---|
| Week 1 | Saturday | | | | |
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| | Sunday | | | | |
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| | Friday | | | | |
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| Week 2 | Saturday | | | | |
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| | Sunday | | | | |
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| | Monday | | | | |
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| | Thursday | | | | |
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| | Friday | | | | |
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**Total Hours:** _____ **Total Mileage:** _____

**Receipts (# amount):** _____
**Total Receipts:** _____

# U.S. Department of Energy
# Facilities Information Management System
# Complete Owned Building Report

**Field Office** 03 Chicago Ops Ofc **Site** 03003 Fermi Natl Accelerator **Area** 001 All

| Property ID | Property Name | Usage Description | *Alternate Name* | Excess Ind / Year |
|---|---|---|---|---|
| 750 | **MI 50 Service Building** | 785 **Accelerator Building** | **MI 50** | **No** |

Initial Acquisition Cost: $224,016
Total Improvement Cos $74,398
Replacement Value: $327,536 (Contractor Value)
FIS Asset Type: Buildings
FIS Reporting Source: Universities Research Assn., Inc.
Outgrant Indicator: N

No of Floors Below Grade: 0
No of Floors: 1
No of Buildings: 1
Gross SQFT: 3,000
Net Occup SQFT: 3,000
Energy Consuming Building/Facilities: 0
Energy Consuming Industrial and Lab: 0
Energy Consuming Metered Proc (Exempt): 3,000
Non-Energy Consuming Bldg/Facilities: 0
Meters: Gas
EMS4 Site: 305

Deficiency: None

Complies with UFAS N
UFAS Exemption: No Public Use
UFAS Justification: Able Body Only
Building Status: Operating
Status Date:
Transfer to PSO:
Status Utilization: 100%
Respon HQ PO: SC

Land Ownership: Owned By DOE

Year Built: 1996
Year Acquired: 1996
Summary Condition: Excellent

Deferred Maint Cost $0
Inspection Date: 09/01/2000
FCI: 0.00%
Annual Reqd Maint: $1,203
Annual Actual Maint $1,115
Availability %:
Failure Rate Normal:
Failure Rate Standby:

Seismic Essential: P1
Seismic Exemption: Designated to comply with Executive Order 12699
Seismic Comments

Design Use: Accelerator Building
Historic Designation: Not Evaluated

Occupants Ind: N

Model Bldg: Steel Frame with Infill Shear Walls
Hazard Category: Not Applicable
*Notes:* N/A

**OCCUPANTS:**

| Occupant Type: | Occupant Name: | No of Empl |
|---|---|---|