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A Public Humanity: the Application of Isotopic Analysis to the Intersection Between Body and Law at the Milwaukee County Poor Farm Cemetery

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A PUBLIC HUMANITY: THE APPLICATION OF ISOTOPIC ANALYSIS TO THE INTERSECTION BETWEEN BODY AND LAW AT THE MILWAUKEE COUNTY POOR FARM CEMETERY

by

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ABSTRACT

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The Milwaukee County Poor Farm Cemetery is an umbrella term used to describe the four cemeteries that were used by Milwaukee County from 1878 through 1974 for the burial of the indigent, unclaimed, institutionalized, and anatomized. Three of these cemeteries remain undisturbed. The primary focus of this research is the twice-excavated Cemetery II (Wisconsin Burial Site 47BMI0076), in use between 1882 and 1925. Archaeological excavations in 1991-1992 and again in 2013 resulted in the recovery of over 2,400 individuals from this cemetery location.

In Wisconsin, legislative efforts to govern indigent burial and dissection mediated competing aspirations between medical education and the social contract of decent burial implicit in common law. The archaeological record of Cemetery II (47BMI0076) attests to the resulting void, providing evidence of divergent interests between the poor and professionals, individual and institutional decisions, and the reality of "decent burial".

Approximately one-quarter of Cemetery II (47BMI0076) interments excavated in 2013 did not meet expectations for standard, institutionalized pauper burials and have been associated with the local medical establishment, including the medical colleges, County Hospital and pathology laboratory, and the Coroner's Office (Richards et al. 2016). Current analyses suggest

that a comparable pattern exists within the burials excavated in 1991-1992. Outstanding questions related to the practices that resulted in these two general categories of burials, here identified as Categories A and B, persist.

This dissertation utilizes strontium isotope analysis, a geochemical method that is applied to human skeletal tissue, to address outstanding questions at the intersection of the body and law within the Milwaukee County Poor Farm Cemetery context. Two primary questions informed the research goals of this project. First, were specific immigrant groups targeted for the postmortem investigative practices, especially dissection, that frequently resulted in Category B burials? Second, what contributions could be made to what is known about the burial population through the application of strontium isotope analysis contextualized with historical documentation?

To generate information on individuals' natal regions, this project created strontium isotope profiles for 62 individuals interred at the Milwaukee County Poor Farm Cemetery. The first and third, and where necessary, second permanent molars of 62 individuals and one dog were sampled for enamel apatite, producing a dataset of 123 strontium isotope signatures. This dataset comprises three groups: individuals from Category A burials, individuals from Category B burials, and a bioavailable $^{87}Sr/^{86}Sr$ group to identify locally born individuals.

This research demonstrates that there was no targeted selection of a specific immigrant population for dissection on the part of Milwaukee's early medical colleges and institutions. Rather, the factors that led to an individual being interred in a Category B burial may have been more opportunity-based, such as the relative utility (freshness) of a corpse and availability. Further, the strontium isotope signatures produced have been used to interpret and complement historical document research, refine current understandings of internal spatial and temporal

organization within the southwestern portion of Cemetery II (47BMI0076), and contribute to the identification of 10 individuals.

The strontium isotope research conducted for this dissertation is grounded within a wider social and anthropological context, exploring what can be learned about immigrant experiences, the experiences of socially marginalized people, and the legislative relationships of the state to the body that continue to define lives and death today.

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Chapter 1: Introduction & Cemetery Background

> "The erasure of the pauper dead from cemeteries made the body's last claim on public notice and public space as it moved toward the grave more emotionally exigent, more poignant, more important to the poor and dispossessed. The possibilities of social death had increased," (Laqueur 2015:313).

Project Introduction

The Milwaukee County Poor Farm Cemetery is an umbrella term used to describe the four cemeteries that were used by Milwaukee County from 1878 through 1974 for the burial of the indigent, unclaimed, institutionalized, and anatomized. Three of these cemeteries remain undisturbed. The primary focus of this research is the twice-excavated Cemetery II (Wisconsin Burial Site 47BMI0076), in use between 1882 and 1925. Archaeological excavations in 1991-1992 and again in 2013 resulted in the recovery of over 2,400 individuals from this cemetery location.

In Wisconsin, legislative efforts to govern indigent burial and dissection mediated competing aspirations between medical education and the social contract of decent burial implicit in common law. The archaeological record of Cemetery II (47BMI0076) attests to the resulting void, providing evidence of divergent interests between the poor and professionals, individual and institutional decisions, and the reality of "decent burial". For the purposes of this project, interments took two forms in the archaeological evidence, Category A burials and Category B burials. The terms "Category A" and "Category B" were selected over other options, such as expected/unexpected, normative/non-normative, or standard/deviant because A and B are relatively neutral "terms" and do not incorporate language into category descriptions that has already begun the interpretive process. While A and B are by no means the only ways to organize information and may represent a somewhat blunt approach, these categories do provide

a useful starting point to explore complex patterns of behavior that inform our understandings of time, norms, and context of interments at the Milwaukee County Poor Farm Cemetery.

Category A represents a standard, institutionalized pauper burial within the Milwaukee County Poor Farm Cemetery context. A rich body of evidence from multiple sources informs our expectations as archaeologists of what represents a "standard pattern" of interment in this setting. These sources include: archaeological site reports from comparable institutional settings in the Unites States; archaeological data from two separate excavations of Cemetery II (47BMI0076); contemporary Christian eschatology that proscribed orderly interments in an extended, supine position with the head to the west; historical documentation such as newspapers, state legislation, county rules and regulations (particularly Milwaukee County's Rule 17), the *Proceedings of the Milwaukee County Board of Supervisors* that include budgets and information on contracts and purchasing, and the record of interments at the cemeteries, the *Register of Burial at the Milwaukee County Poor Farm*. At the Milwaukee County Poor Farm Cemetery, a standard adult interment was one individual, typically in a six-sided wooden coffin, in an extended, supine position with the head to the west, with few or no personal grave goods. The interment of this individual was recorded in the *Register of Burial at the Milwaukee County Poor Farm.* Per Milwaukee County's Rule 17, a painted and numbered headboard was placed at the head of the coffin. In the vast majority of cases (excluding autopsies), adults interred in Category A burials display no indications of medical postmortem investigative practices, such as dissection.

Category B is substantially more complex. For the purposes of this project, four primary criteria were identified for inclusion within this category: severing or sectioning cuts to elements beyond cuts associated with an autopsy, more than one individual in a coffin, missing elements without evidence of burial disturbance, and grave inclusions including medical and hospital

objects. Each criterion represents a departure from the standard, institutionalized pauper's burials of Category A and is explained in detail in the following paragraphs. With regard to severing or sectioning cuts to elements beyond cuts associated with an autopsy, Richards et al. (2017) established categories of postmortem investigation for the Milwaukee County Poor Farm Cemetery context. Richards et al. state,

> "Dissection can be determined by the presence of one or more of the following osteological markers: cross-section cuts to one or more postcranial elements, sometimes accompanied by superficial scratches, kerfs, and breakaway spurs on the bones; and extraneous cuts to the cranium which are not associated with craniotomy," (2017:244).

Individuals included within this project's Category B display evidence for sectioning or severing cut marks on the following elements: cranium (not associated with craniotomy), mandible, teeth, clavicle, vertebrae, radius, ulna, sacrum, femur, patella, tibia, fibula, and calcaneus.

The second criterion for inclusion within Category B is the presence of more than one individual in a coffin. Contrary to the practice outlined in state statute, the 1991-92 and 2013 excavations uncovered evidence of mixed and commingled burials. The term mixed burials is an internal Milwaukee County Poor Farm Cemetery project categorization that refers to a recovery context "where at least one individual was more than 50% complete but where other remains could be individualized and assigned multiple lot numbers," and is distinguished from a commingled context, "where individuality was unclear and a single lot number was assigned to all remains regardless of the minimum number of individuals represented," (Richards et al. 2016:40). In cases when more than one individual (or parts of individuals) were interred in the same coffin, it is substantially more likely to observe departures from the burial positioning seen in Category A, with instances of non-extended, prone, or head to the east positioning occurring

in Category B burials. Additionally, an individual's remains might be separated between multiple coffins, as was the case for Paul Kohler. Kohler's story is discussed further in Chapter 6.

The third criterion for inclusion within Category B is missing elements without evidence of burial disturbance. In the Milwaukee County Rules and Regulations, Rule 4 in the rules for physicians affiliated with the County Hospital proscribes the following:

> "It shall be his duty to advance and assist in the demonstration of interesting pathological materials before the various medical organizations, and to co-operate in the preparation for publication of worthy results of the work of the laboratory. Each contribution to the literature based on work performed wholly or in part in the laboratory, shall contain beneath the title, the phrase, "From the Pathological Laboratory of Milwaukee County Hospital," (1880:35).

The curation of anatomical materials was putatively legal and is discussed further in Chapter 2. Burial Lot 3039, identified as Adolf Wildiner, provides an illustration. Wildiner died on November 14, 1923 at the County Hospital. The primary cause of death listed on his death certificate was "tuberculosis of illium [*sic*]" (Richards 1997:560). Skeletal evidence for tuberculosis was observed on Wildiner's remains and a vertebral sample tested positive for the IS6110 repetitive element marker associated with *Myobacterium tuberculosis* (Werner 2015:45). Wildiner's body was not interred intact: his left os coxae and proximal portion of his left femur were not present in the burial. The distal portion of his left leg below the severing cut in the femur was present. Given Wildiner's cause of death, place of death, and emphasis placed on collecting and curating pathological samples, it is not unreasonable to hypothesize that a portion of his body was taken to build the pathological specimen collection at the Milwaukee County Hospital.

The fourth criterion for inclusion within Category B is the presence of grave inclusions identified as medical/hospital objects. Several mixed and commingled burials were accompanied with material culture putatively associated with Milwaukee's medical establishment, such as

broken laboratory glassware, rubber tubing, bandages, prescription bottles, and an abundance of material that seems to defy logical classification, including peanut shells, a garden rake, and ceramic crockery (Richards et al. 2016). While substantially less frequent, some single adults were also interred with this type of material culture (*see* Appendix A). In many cases, the human remains in these contexts display evidence of dissection (Richards et al. 2017). There appears to be no distinction between the treatment of the remains and the "other" objects in the coffin. The concluded "use life" of these waste materials may be compared to the "use life" of the anatomized human remains.

Approximately one-quarter of Cemetery II (47BMI0076) interments excavated in 2013 did not meet expectations for standard, institutionalized pauper burials and have been associated with the local medical establishment, including the medical colleges, County Hospital and pathology laboratory, and the Coroner's Office (Richards et al. 2016). Current analyses suggest that a comparable pattern exists within the burials excavated in 1991-1992. Outstanding questions related to the practices that resulted in these two general categories of burials persist. This research employs strontium isotope analysis to address some of these outstanding questions.

Utilizing strontium isotope analysis, a geochemical method that is applied to human skeletal tissue, this project created strontium isotope profiles for 62 individuals interred at the Milwaukee County Poor Farm Cemetery to generate information on individuals' natal regions. The first and third, and where necessary, second permanent molars of 62 individuals and one dog were sampled for enamel apatite, producing a dataset of 123 strontium signatures. This dataset comprises three groups: individuals from Category A burials, individuals from Category B burials, and a bioavailable signature group to identify locally born individuals. The dataset was used to explore two distinct, but related research goals.

First, were specific immigrant groups targeted for the postmortem investigative practices, especially dissection, that frequently resulted in Category B burials? In testing the isotopic profiles, it is predicted that no significant difference will be observed between the $^{87}Sr/^{86}Sr$ signatures of individuals buried in Category A contexts and individuals buried in Category B contexts. If this assumption is correct, the factors that led to an individual being interred within a Category B context may have been more socially or opportunity-based, such as the status of being unclaimed, rather than a targeted selection of a specific immigrant population for dissection on the part of Milwaukee's early medical colleges.

In the forward to the *Bioarchaeology of Dissection and Autopsy in the United States*, Martin refers to the "political-economic forces that made some bodies more easily obtainable for dissection and autopsy than others," (2017:v). Later, Martin extends this idea even further, in referencing the "institutions and regulatory bodies that promoted a kind of violence toward the dead as they were strategically *targeted* for dissection, autopsy, and other kinds of postmortem uses," (2017:vi; emphasis added). Several scholars have produced work related to the intersection of law, institutions, medical education, dissection, and the dead whose bodies were exploited, abused, and or targeted therein (*e.g.* Blakely and Harrington 1997; Cantor 2010; Crist et al. 2017; Garment et al. 2007; Goodwin 2006; Halling and Seidemann 2017; Halperin 2007; Humphrey 1973; Muller et al. 2017; Nystrom 2017; Richards et al. 2017; Richardson 1987; Sappol 2002). Anthropological literature informed and provided the background for asking whether a group was targeted for the post-mortem investigative practices that frequently resulted in Category B burials. Wisconsin's legislation pertaining to dissection and Milwaukee's demographic history refined the "whom" for this specific historical context. With a focus on the natal origins, the application of strontium isotope analysis was a logical choice. Indeed, the use

of this geochemical technique to lend additional evidentiary insights into a context featuring differential burial treatment is not unknown (*e.g.* Gregoricka et al.'s 2014 work on "deviant burials" in Medieval Poland). Finally, it is important to ask this type of research question as it confronts issues of social and structural inequality that may not be acknowledged in historical recordation of the practices of Milwaukee's medical institutions or social welfare services (Zuckerman et al. 2014).

This project's second research goal is to determine what contributions can be made to what is known about the burial population through the application of strontium isotope analysis contextualized with historical documentation. Due to a process of institutional repurposing of the Milwaukee County Poor Farm Cemetery, names cannot be assigned to the majority of interred individuals. Nonetheless, with historic immigration data for Milwaukee and the natal regions listed in the *Register of Burial*, much is known about the burials as a whole. The use of first and third molars for the generation of $^{87}Sr/^{86}Sr$ signatures allows an exploration of individuals' natal regions and life history. Highlighting immigrants is important within this cemetery context for two reasons. First, from the perspective of strontium and questions of locality, the vast majority of the individuals interred within the Milwaukee County Poor Farm Cemetery were not born in Wisconsin (Drew 2018 in preparation; Richards and Kastell 1993; Richards et al. 2016). This reflects a larger picture of a rapidly urbanizing, industrializing Midwestern city that experienced tremendous pressure as the population, driven by Yankee migration and European immigration, grew from 1,712 in 1840 to 457,147 by 1910 (Leavitt 1996:11). Second, from a broader anthropological perspective, the "frightening experience of immigration is exemplified in a Potter's field burial," (Richards et al. 2016:231). The exploration of which individuals were interred at the Potter's field is part of the historical significance of rapid growth in Milwaukee.

This dissertation is thus a bioarchaeology of social engagement (Zuckerman et al. 2014)- an attempt through research to reverse the anonymity and neglect that has characterized the history of this cemetery and the "social death" of those interred within it. Theorizations of postmortem agency employed by this project are an extension of the relationship between agency and materiality, a theoretical framework in this application that both engages with the multiple relationships (entanglements) within a cemetery context that is simultaneously institutionalized and actor driven and offers sufficient latitude to explore multi-scalar and multi-temporal patterns of tension and indeterminacy (Moore 2000).

The relationships of the state to the body and of cemetery to law through the specific legislative patterns that continue to define lives and death today are of particular importance to archaeologists. A larger picture begins to unfold that illustrates the choices and decisions that are, as Fagan describes, part of the "process of trading up on the scale of vulnerability," (2004:xv). In other words, understanding where we are now is impossible without understanding how we got there. When legislative actions and the resulting influences on historic cemetery site formation and change are considered, identifying gaps between what we expect to see and the resulting ground truth of archaeological excavation can provide more nuanced understandings of laws in practice over time and provide incomparable information about the experiences of those interred.

Chapter 2 presents a discussion of anatomization and the law, with a particular focus on historical American jurisprudence that defines the relationship between the living and the dead, the development of Wisconsin's Anatomy Act, and the archaeological evidence for divergence from legal proscriptions for decent burial. Chapter 3 provides a brief summary of materiality studies in anthropology. Chapter 4 provides a brief introduction to strontium isotope analysis and

outlines the methodology of this project. Chapter 5 presents the results of the strontium analysis and statistical analyses of the strontium dataset. Chapter 6 contextualizes discussion of these analyses with historic demographic data for Milwaukee and the burial population of the cemetery as a whole. The research hypotheses are evaluated and results are discussed for putatively identified individuals within the research sample. Specific instances where strontium results have contributed to new identifications within the burial population are highlighted, contributions to current understandings of the internal spatial organization of specific sections of Cemetery II (47BMI0076) are evaluated, and avenues for future research are proposed. Lastly, Chapter 7 describes the broader anthropological significance of this research and summarizes the research conclusions of this project.

Project Background

How do you trace the history of a place that did not exist or was not used for extended periods of time? Historically and archaeologically, potter's fields have been vandalized, abandoned, disturbed, and repurposed (Bell 1987, 1990; Crist et al. 2017; Elia and Wesolowsky 1991; Grauer et al. 2017; Lowe 2017; Nystrom et al. 2017; Owsley 1995, Owsley et al. 1990; Richards 1997; Richards and Kastell 1993; Richards et al. 2016; Sloane 1991). In the United States, few graveyards were explicitly established as potter's fields before the nineteenth-century (Sloane 1991:24). With the advent of the cemetery and urbanization, community connections and safety nets that might have limited the number of potter's fields and frequency of interment therein disappeared. With salvation associated with proper burial in Christian eschatology, infrastructure arose to ensure that what was regarded as a basic necessity of civilization would not be denied to even the very poor (Laqueur 2015:314; Sloane 1991:24). The state of Wisconsin was no exception. In 1838, Act 22 "For Relief of Poor" was passed, providing for the "decent

burial" of the poor. The "decent burial" of the poor was a perennial mandate as Wisconsin gained statehood in 1848 (1838 Wis. Terr. Laws 22; Wis. Stat. § 49.785 (2017)).

While indigent burial as legally mandated in Wisconsin was designed to fulfill basic standards of decency, in the nineteenth and twentieth centuries, pauper's burials and potter's fields were stigmatized and viewed with dread by the poor (Richards 1997:282). However, the picture of a poorly-kept, forgotten and unconsecrated space, characterized by minimal funerary expenditure on the surface (plain coffins, wooden crosses, and wagons, rather than hearses, for transportation) might also apply in part to privately held cemeteries that were run as commercial concerns or small rural cemeteries of the time (Richards 1997:283). Hoffman describes the common abhorrence of pauper burials as resting on a "substantial basis of fact and bitter experience," (1919:91). This bitter experience likely included the very real fear of grave robbing of corpses for dissection, a practice that occurred with greater frequency within potter's fields (Garment et al. 2007; Sappol 2002). Thieves tended to target potter's fields, as they lacked many of the precautions against theft of remains, and consequences tended to be minor, given the relatively powerless status of family members (Garment et al. 2007:1001). An additional fear, particularly for immigrants, was the disruption of social identity that was carefully maintained through churches and specific religious rituals of death (Sappol 2002). Local churches provided an integral way to maintain a sense of community as an immigrant, and the industrial-style practices of legally regulated potter's fields threatened the inscription of an identity of anonymity rather than membership in a community.

The poor utilized a variety of strategies to avoid a pauper's burial, including community collections, affiliations with religious institutions and charities, and insurance schemes (Richardson 1987:278; Sappol 2002:134). The success of community collections was related to

the size and closeness of the deceased's social network. Those that fell through this safety net, particularly the unclaimed, were at the greatest risk of a pauper's burial (Richardson 1987:278). Contingent action against the pauper's fate, in the form of commercial death insurance, increased dramatically from the 1870s onward, and many insurance companies owed their longevity and success to mass-marketed penny death insurance policies (Sappol 2002:135). Examples of "keeping the dead" by families until decomposed past the point of utility for dissectors are known from United Kingdom, and even temporary storage of a corpse within living accommodations seemed preferable to a loved one falling into the limbo of the unclaimed (Richardson 1987:278; Sappol 2002:135).

While grave robbing and anatomization may not be as much of a risk today, a "proper death" still resonates with most people. Hart Island (New York, New York) is perhaps the best known and one of the largest currently operational potter's field in the United States today. Adults are buried in 150 person trenches; infants are buried in 1,000 person trenches (Bernstein 2016a:A20). Prison labor from nearby Rikers Island has been used to bury the indigent, unclaimed, or unidentified since 1869 and over 850,000 individuals have been interred at this location (The Hart Island Project 2016). Since 1980, the Hart Island Project has provided "access to information about the burials on Hart Island and tools for storytelling so that no one is omitted from history," (The Hart Island Project 2016). Nearly 65,000 burials have become part of the Traveling Cloud Museum, which includes names, an interactive GPS map of where an individual is buried, and a "clock that measures the period of time that they have been buried in anonymity until someone adds a story, image, epitaph, sound or video," (The Hart Island Project 2016). The Hart Island Project has been a major proponent of proposed legislation (2014) to transform Hart Island into a public park, with administrative control transferred from the Department of

Corrections to the Parks Department. Brad Lander, a proponent of a new future for Hart Island, states, "it seems so 19th century… it's ghoulish to think of Rikers inmates being trucked over to bury infants who have been abandoned," (Bernstein 2016a:A20). The proposed legislation calls for Hart Island to become a 'natural' or 'green' burial space. This idea, developed by British landscape architects, is partially reminiscent of the nascent period (1870-1920) of park-oriented cemeteries in the United States (Sloane 1991:134). "The city might even be able to sell such graves to affluent, ecology-minded New Yorkers…if it addresses the shore erosion that has at times sent skulls to wash ashore on City Island," (Bernstein 2016a:A20).

Milwaukee, the Poor, and the County Institutions

Milwaukee County, created by an act of the Michigan Territory Legislature in 1834, preceded the creation of the Wisconsin Territory by two years (Old Settler's Club 1911:4). The boundaries of the newly created county extended "from the northern boundary of Illinois, and west to about the present north line of Washington County, and west to what are now known as Madison and Portage City (Old Settler's Club 1911:4). Milwaukee County is one of the oldest continuous forms of "representative government in Southeast Wisconsin," (Aderman 1987:vii). Initially, relief for the poor provided "applicants with food, firewood and occasionally lodging," through a system known as outdoor relief (Avella 1987:198). This assistance was administered by designated officers and was utilized to provide aid for those for whom "traditional religious, private charity, or family help was not available," (Richards et al. 2016:10).

The necessity of providing assistance to the poor was recognized by the Wisconsin Territorial Legislature in 1838, in Act 22 "For Relief of Poor". The county commissioners within the territory were charged with "entire and exclusive superintendence of the poor in their respective counties," (1838 Wis. Terr. Laws 22). The act identifies the county as a support of

"last resort"; up to three generations of relatives are identified as having primary responsibility for assistance to any poor person. Residence was also important- an application for relief from a given county depended on a minimum of twelve month's residence prior to relief (1838 Wis. Terr. Laws 22). Though the act clearly designates poor relief as a responsibility of the counties, a confusing, overlapping mixed system of county and town-based relief emerged, with attendant disagreements about residency, transient poor, and the boundaries of responsibility (Avella 1987:198). An 1843 petition to the Wisconsin Territorial Legislature describes the contemporary laws for poor relief as both defective and nearly useless (Avella 1987:198).

A solution appeared in the late 1840s with Section 49 of the Wisconsin statutes, which permitted county supervisors to assume responsibility for the poor, and the county system was quickly adopted in Milwaukee County (Avella 1987:199). The Board of Supervisors, faced with the growing costs of outdoor relief following the 1848-1850 cholera epidemic, began to consider Eastern U.S. models of 'indoor relief'- the partially self-supporting institutions (through farming or light industry) variously referred to as Almshouses, Poor Houses, or County Farms (Avella 1987:199). At the time, poor relief in Milwaukee reflected contemporary societal attitudes that saw public assistance as a last resort, repelling "all but the most needy," (Avella 1987:197). Thus, poor relief was frequently coupled with the requirement of labor on the part of all 'able-bodied' persons receiving charity, a legacy of 16th and 17th century English Poor Laws that cast a long shadow over American laws and institutions for public assistance (Avella 1987; Tratner 1979).

In 1852, Milwaukee County purchased Gregg's Farm, with the intent of setting up an official program of indoor relief. Gregg, a member of the county board at the time, sold the 160-acre farm, livestock, crops in the field, barns, and large farmhouse for $5,000 (Avella 1987:201;

Prentiss 1853). This almshouse became the first Milwaukee County institution in Wauwatosa, and later purchases of land adjacent to Gregg's Farm expanded Milwaukee County's holdings "to nearly 1,200 acres and permanently settled most functions of Milwaukee County's social welfare services in the Wauwatosa location," (Avella 1987:201). By 1856, 53 persons were living at the Almshouse and "the poor, the sick, the orphans and the insane shared the same living quarters," (Richards et al. 2016:11; Milwaukee Sentinel [MS], 28 May 1856). The situation quickly became untenable and in 1860, a small county hospital was constructed to treat the contagiously ill, while the sick poor at the Almshouse were segregated into a separate wing of the building (Avella 1987:2). While the county board hoped that indoor relief would be a more cost-effective solution, economic recessions in the 1850s and growing population (the city of Milwaukee had grown from 1,712 in 1840 to 45,246 in 1860) meant an ever-increasing need for social aid (Leavitt 1996:11). In 1861, the board ruled that all adult paupers would labor and minors would be indentured (Olson 1987:21; Richards et al. 2016:11).

Overcrowding and poor sanitation plagued the new County Hospital (Avella 1987:203). The primary contribution of the hospital, as described by Avella, was "to effect the much needed separation of the sick poor from the rest of the Almshouse population," (1987:203). Avella (1987) and Richards et al. (2016) discuss the stigma associated with treatment at the County Hospital; it was genuinely a refuge of last resort. Richards and Kastell (1993) and Richards (1997) provide excerpts of investigations and visits to county institutions and the conditions, ranging from adequate to deplorable, found therein. The path to many needed reforms began with the election of the first medical professional, Dr. Fisk H. Day, to the position of Superintendent of the County Hospital in 1876 (Richards et al. 2016:12). However, the County Hospital was completely destroyed and two inmates were killed in a disastrous fire just four

years later (Avella 1987:204). A larger hospital was rebuilt immediately and the county board used the opportunity to authorize "construction of separate institutions for the care of the sick and the insane," (Richards et al. 2016:12). The Hart farm was purchased in 1880 for the latter purpose, and within the year, a new asylum to accommodate 275 patients was completed (Avella 1987:16). In addition to serving patients from Milwaukee, chronically insane patients were sent from the State Asylum in Madison and a mere seven years later, the new asylum's capacity was quickly overwhelmed (Avella 1987:216). New facilities were called for, and in 1889, a new facility for custodial care of the chronically insane was built (Asylum for the Chronic Insane) while the older facility was designated for the treatment and rehabilitation of the acute insane (Milwaukee County Hospital for the Acute Insane) (Avella 1987:216).

The health and well-being of minors became a preoccupation for the Milwaukee County Board when reformers began pushing a child-welfare agenda in the 1870s. Periodic epidemics and tragedies had increased the number of indigent minors at the Almshouse in the preceding years and reformers sought to remove children from the "corrupting" influences of older paupers (Avella 1987:206). In 1875, Chapter 325 authorized the creation of industrial schools for minors. Minors between the age of five and sixteen were also prohibited from placement in city or county poorhouses (Avella 1987:207). Various makeshift solutions were applied until 1882, when Milwaukee County built a temporary home for minors on the county grounds (Avella 1987:208; Richards et al. 2016:12). Though efforts were made to reduce the number of children at the home through a return to their families, placement in industrial schools, adoption, or "binding out", immigration, another cholera epidemic, and continuing financial strain led to dangerous overcrowding a mere five years later (Avella 1987:209; Richards et al. 2016:14). A new Home for Dependent Children was completed in 1898 on the county grounds and though

this facility was intended as a temporary home for children, some minors became permanent residents until their majority (Avella 1987:209). Simultaneously, the Almshouse, the original nexus of each of these new institutions, was resituated in a new, much larger building. The new Almshouse could serve 700 inmates, 500 men and 200 women, and by 1896, three years after the new building was opened, there were 592 occupants (Richards et al. 2016:14). In 1917, Wisconsin Act 642 allowed the county to adopt new names for the Almshouse, asylums, and Home for Dependent Children that indicated the general nature and purpose of the institutions, combating the negative implications associated with their original names (Richards et al. 2016:14). Figure 1.1 details the important dates and name changes of the Milwaukee County Institutions.

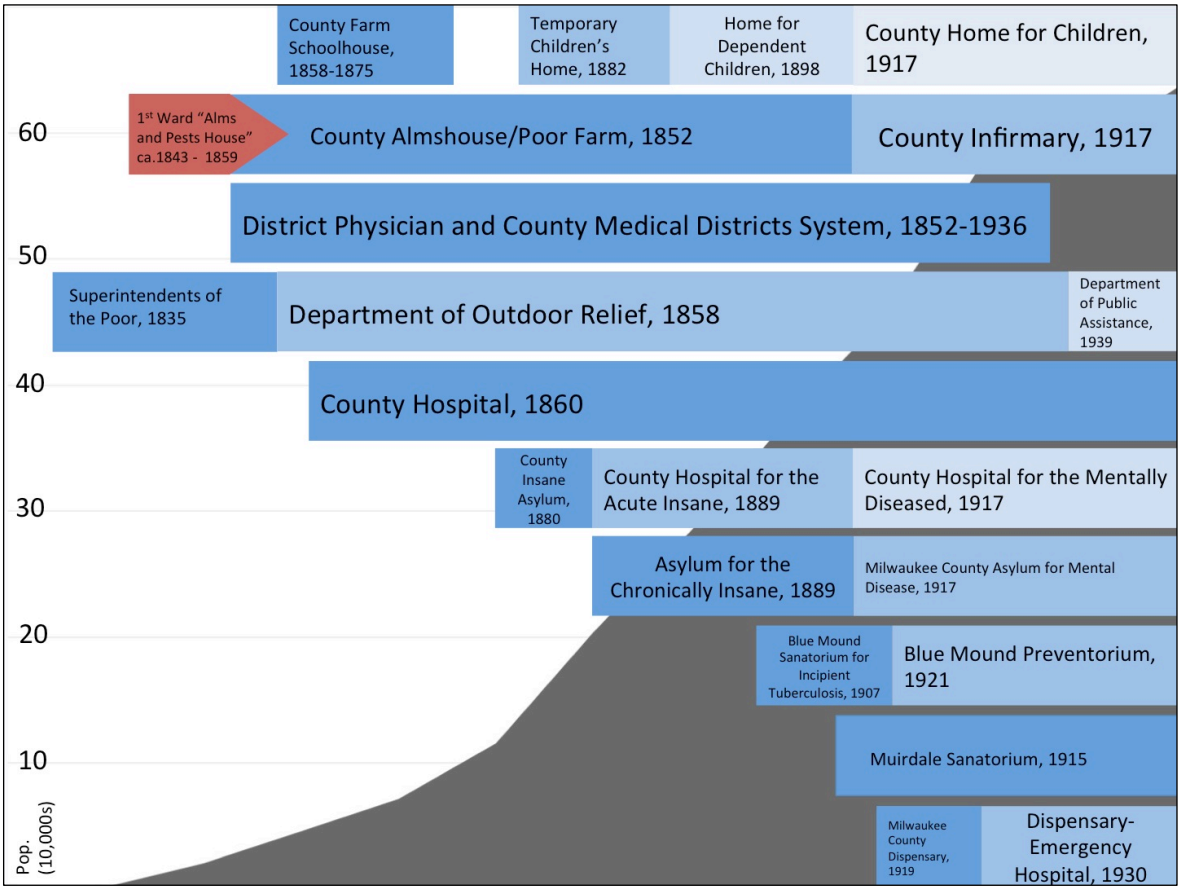

Figure 1.1. Timeline of Milwaukee County Institutions with dates, name changes, and population. Source: Richards et al. 2016:15. Reproduced with permission.

The new century brought other changes to the county grounds, including an addition to the County Hospital (1903), a separate laboratory building (1905), and the Muirdale Sanitarium to treat tuberculosis patients (1915) (Richards et al. 2016:14; Weihing 1988). Following the conclusion of World War I, " "patients" who required neither nursing nor medical care would reside in a corridor that connected the two wings of the hospital where they received free meals as well as lodging," one result of the period's high rates of homelessness and unemployment (Richards et al. 2016:15). By 1930, the city of Milwaukee was home to 578,249 people and yet another new County Hospital was opened to combat overcrowding (Leavitt 1996:11; Richards 2016:15). The construction of one additional county building has vital relevance to the history of the Milwaukee County Poor Farm Cemetery. In 1932, a new nurse's residence and school were built to replace the program's previous smaller quarters (Weihing 1988). This large, H-shaped building was constructed within the boundaries of the second of Milwaukee County's cemeteries and details of this disturbance are provided in the following section.

The Milwaukee County Poor Farm Cemetery

The practice of burying paupers, the institutionalized, and the unidentified at the Milwaukee County Poor Farm possibly began as early as 1852 (Richards 1997; Richards et al. 2016; Richards and Kastell 1993). Consistent interments at the cemetery were most likely underway by 1859, continued while the area became the Milwaukee County Medical Complex, and ceased in 1974, with the demolition of the Milwaukee County Asylum for Mental Diseases and the contracting out of burials of the indigent to private funeral homes (Richards 1997:39). The Milwaukee County Poor Farm Cemetery is the umbrella term used to describe the four cemeteries that were used by Milwaukee County for the burial of the indigent, unclaimed, anatomized, and residents of various Milwaukee County Institutions (Richards et al. 2016). Per

Richards et al., “three of these cemeteries, 1, 3, and 4, are located on the periphery of the Milwaukee County Grounds and remain undisturbed,” (2016:18). Figure 1.2 illustrates the location of the four cemeteries in relation to structures on the Milwaukee County Grounds. The map inset illustrates the location of Cemetery II (47BMI0076) within Milwaukee County and the state of Wisconsin.

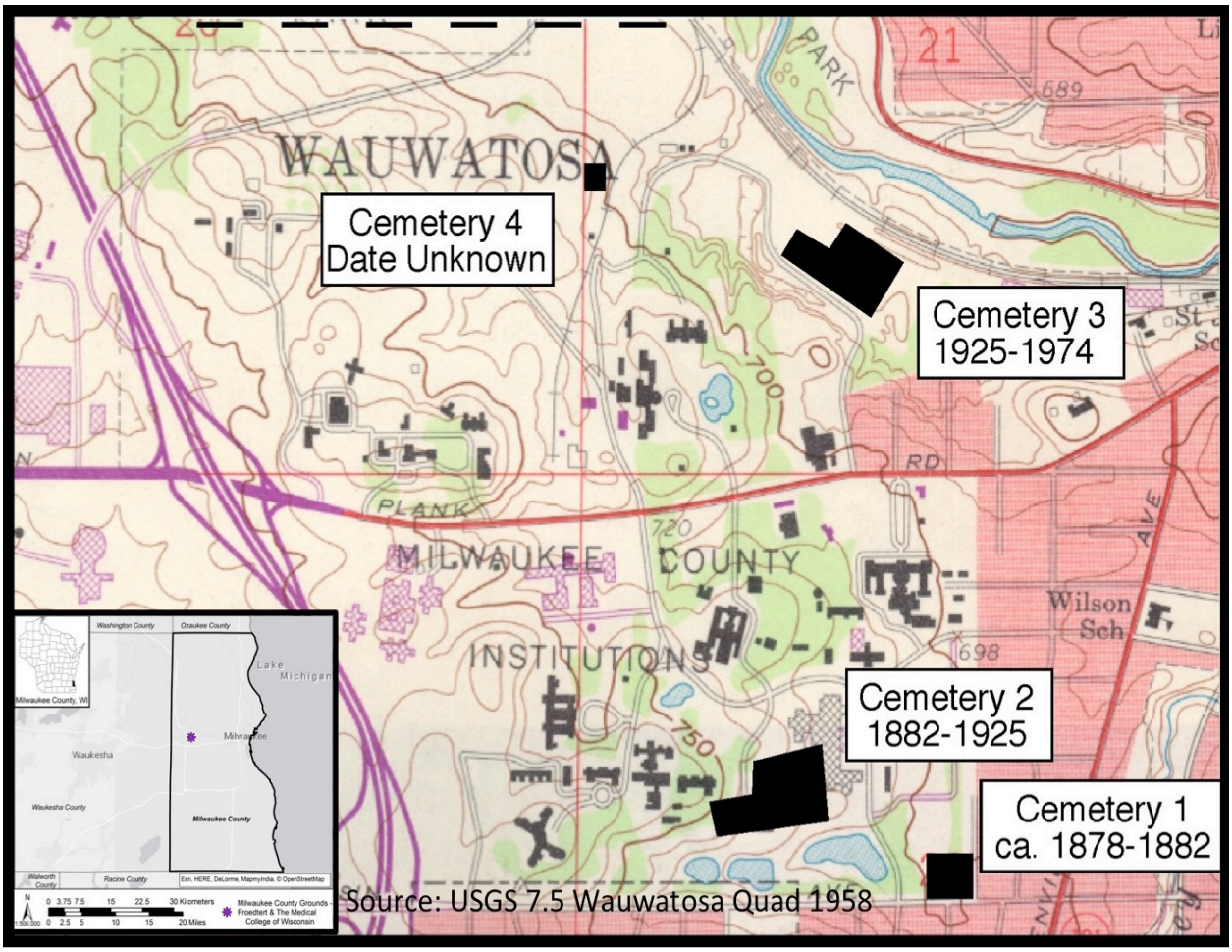

Figure 1.2. Locations of the Milwaukee County Poor Farm Cemeteries. Reproduced with permission from Richards et al. 2016:17.

The primary focus of research has been the twice-excavated Cemetery II (Wisconsin Burial Site 47BMI0076), in use between 1882 and 1925. Figure 1.3 shows the mapped coffin locations of burials recovered in the 1991-1992 and 2013 excavations. The area highlighted in red illustrates the area of intact burials in Cemetery II (47BMI0076) below present-day Doyne Avenue, and the

map inset illustrates the continuity between the two excavations.

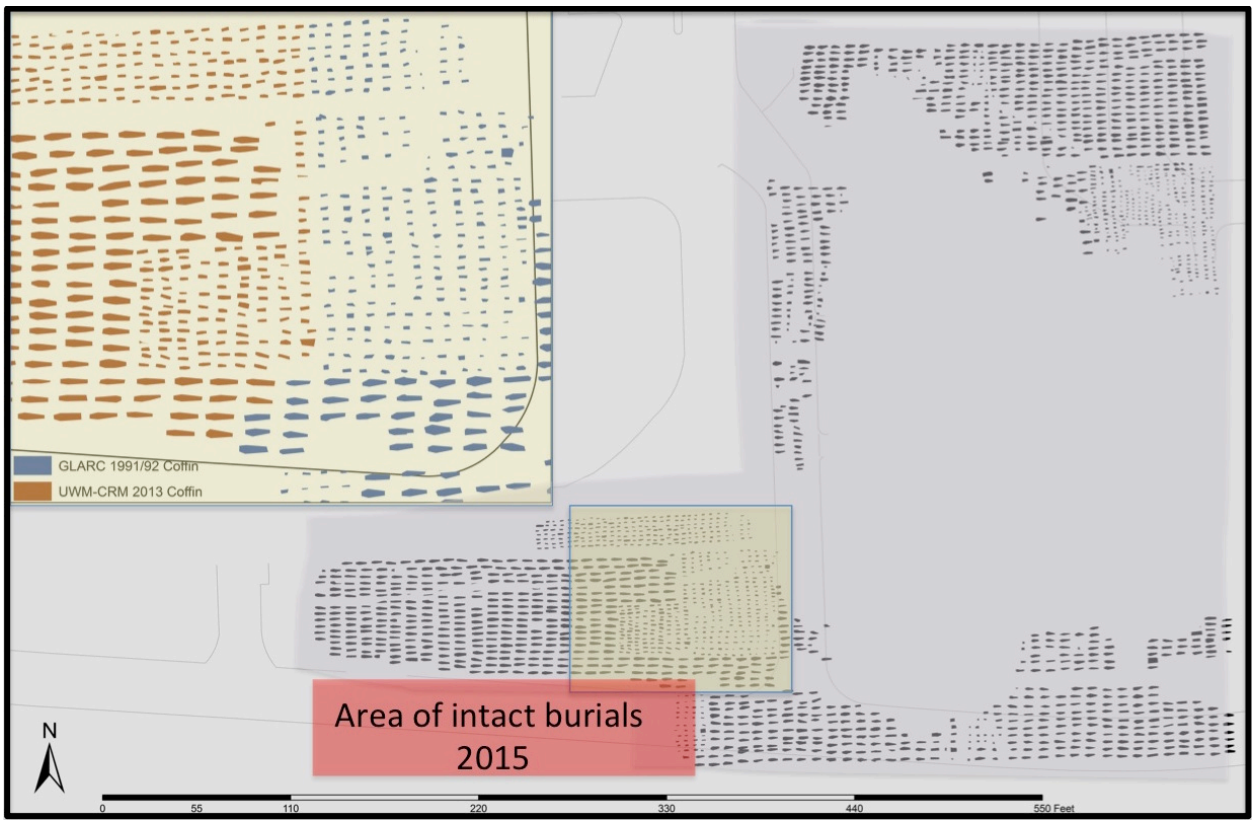

Figure 1.3. Excavated portions of Cemetery II (47BMI0076) from 1991-1992 and 2013. Reproduced with permission from Richards et al. 2016:81.

Act 22 of the Wisconsin Territorial Legislature did not merely mandate relief for the living poor. Per Section 6, "…if said sick person shall die, then the said overseers shall give, or order to be given, to such person, a decent burial…" (1838 Wis. Terr. Laws 22). While this clause specifically outlines services to be rendered for non-residents, it is reasonable to infer a similar responsibility was in place for indigent residents of a given county. Ten years later, minutes from the *Proceedings of the Milwaukee County Board of Supervisors* provide additional evidence for Milwaukee County's efforts on behalf of the pauper dead. The board authorized the Sheriff of Milwaukee County to contract a cabinetmaker to deliver coffins to the Coroner, for a price of not more than two dollars and twenty-five cents per coffin (*Proceedings of the Milwaukee County Board of Supervisors* 1848). The location where these burials were to take

place is not mentioned, nor is there mention of interments being relocated elsewhere, as was the case with other city cemeteries (Richards 1997:72). As Milwaukee grew, it became necessary to relocate some of the city's earliest cemeteries, including Gruenhagen's Cemetery (also known as the Second Ward Cemetery), the Old Catholic Cemetery, the Old Eastside Cemetery, and the Old Southside Cemetery (Jones and Richards 2018 in preparation; MDS, 30 April 1874:3; Richards 2008). Milwaukee was not alone in this practice; there are numerous examples of orders of removal in state statute: 1875 (Madison), 1876 (Viroqua), 1878 and 1907 (Elkhorn), 1909 (Racine), 1917 (Watertown), and 1925 (Edgar) (1875 Wis. Laws 243; 1876 Wis. Laws 305; 1878 Wis. Laws 18; 1907 Wis. Laws 56; 1909 Wis. Laws 246; 1917 Wis. Laws 112; 1925 Wis. Laws 235).

Details of the early history of the Milwaukee County Poor Farm Cemeteries are limited. Though there is no record of a cemetery associated with the Poor Farm at the Gregg property, Richards et al. argue, "it is likely that the county utilized the property for burial of those individuals who died while residents of the poor farm," (2016:17). The first documentary evidence of an interment associated with the County Poor Farm Cemetery is on an 1872 death certificate, "of the infant of Rosa Flymann buried at the Poor Farm in Wauwatosa," (Richards 1997:72). Five years later, *Proceedings from the Milwaukee County Board of Supervisors* describe the ruinous conditions of the cemetery at the Poor Farm, commenting on the insufficient size, 2.5 acres; unevenness of the ground, low meadow and comparatively high ground; and high water table, which prevented some burials from being dug more than eighteen inches below the surface (*Proceedings of the Milwaukee County Board of Supervisors* 1878). As two thirds of this small plot was considered unusable, a new location for county burials was sought (Richards et al. 1997:73). In 1992, through a combination of remote sensing and mechanical stripping,

Overstreet confirmed the location of this cemetery within the southeast corner of the historic county farm boundaries (Overstreet and Sverdrup 1992).

While the general unsuitability of the cemetery described in the 1878 *Proceedings* was no doubt sufficient impetus to seek a new location for burials, Milwaukee County's own Rule 17 of the Rules and Regulations for the County Farm and Almshouse required graves of no less than six feet depth (1894). With such low-lying, waterlogged land, it would not have been possible to maintain compliance with the rules for grave depth in this location. A copy of the Milwaukee County Rules and Regulations available at the Milwaukee Public Library has a catalogue date of 1880; however, no internal publication date is available. The same rule appears as Rule 8 in this edition (*Milwaukee County Rules and Regulations* 1880). If this catalogue date is accurate, it is probable that Rule 17(8) was in effect prior to the first interment in Cemetery II (47BMI0076), the cemetery that was the focus of archaeological excavations in 1991-1992 and 2013. Rule 17 and other burial proscriptions relating to the Milwaukee County Poor Farm Cemetery are discussed in detail in the following chapter.

Burials were recorded in the *Register of Burial at Milwaukee County Poor Farm* beginning in 1882 (Richards et al. 2016:17). This hand-written, ledger-style document records burials that occurred between 1882 through 1974, providing at a minimum the "date of certificate of health department", a name if known, and the number of the grave (*Register of Burial at Milwaukee County Poor Farm* 1882-1974). On March 30, 1910, the date of burial begins to be included for each interment (*Register of Burial at Milwaukee County Poor Farm* 1882-1974:63). The numbering system for graves is not internally consistent; various combinations of letters and numbers are used and change with some frequency (Richards 1997:98). It is important to note that a map "keyed" to the grave numbers as described in the

Register has not been found. In total, the *Register* includes 178 pages of entries (Richards 1997:98). Figure 1.4 provides a photograph of two example pages from the *Register*.

Figure 1.4. *Register of Burial at Milwaukee County Poor Farm*, Pages 96 and 97 (original curated at the Milwaukee County Historical Society, copy on file at the University of Wisconsin-Milwaukee Archeological Research Laboratory). Reproduced with permission from Richards et al. (2016:19).

The first burial entry listed is for "Elizabeth Hoffman on February 14, 1882, and ends with a June 14, 1974, listing of an unknown female," (Richards et al. 2016:19). While the entries in the *Register* begin in February of 1882, the notation "new Cemetery" appears on August 2, 1882 (Richards 1997:73; *Register of Burial at Milwaukee County Poor Farm* 1882-1974). Additional "new cemetery" notations appear on July 23, 1925 and November 4, 1925, for elders and children, respectively (Richards et al. 2016:19). It is likely that these final new cemetery notations refer to Cemetery IV, the intact and "presently marked cemetery north of Watertown Plank Road that was closed in 1974," (Richards et al. 2016:19). Depending on the year, entries

provide ancillary information including the cause of death, the place of death, and age of death (Richards 1997:79,86). Richards (1997:80-86) provides a complete listing of causes of death listed in the *Register of Burial* between 1882-1925.

Recent comprehensive archival investigations coupled with the 2013 excavation have demonstrated that the *Register* does not in fact document all burials at Cemetery II (47BMI0076), suggesting that "burial activities on the County Grounds were far more complex than the Register suggests," (Richards et al. 2016:25; *see also* Drew 2015). To date, over 250,000 death certificates, representing all death certificates filed in Milwaukee County between 1882-1925, have been examined (Richards et al. 2016:26). Per Richards et al., "this research has identified 7,222 individuals buried on the County Grounds from 1882 to 1925. Of these, only 5,363 (74%) are listed in the Register, resulting in 1,859 burials undocumented; 1,088 (20%) of the total population were medical cadavers," (2016:26). The peak years of interments were in 1917 and 1918, with one earlier spike in burials in 1894, corresponding to simultaneous outbreaks of diphtheria and smallpox (Richards et al. 2016:26).

The burial population of Cemetery II (1882-1925) as described in the *Register of Burial* is overwhelmingly adult and male. Richards calculated that 78% of adult burials were male, 67% of burials overall (including subadults) were male, and 75% of the burial population were adults (1997:93-94). With respect to age, Richards found that the very old and very young seemed to "dominate" the *Register of Burial* (Richards 1997:103). The exception to this was individuals from the community at large buried at County expense; these individuals fell between 20-40 years of age (Richards 1997:103). The 2013 University of Wisconsin-Milwaukee Cultural Resource Management Report of Investigations offers a comprehensive demographic profile of the cemetery based on recent archival research (Richards et al. 2016). Several dissertations and

Masters theses have focused on various aspects of the Milwaukee County Poor Farm burial population, including: Charaus (2010; health, particularly women's health); Dougherty (2011; trauma); Drew (2018 in preparation; demography and individual identifications); Florence (2007; sub-adult health); Freire (2011; Wormian bones); Hutchins (1998; infant growth); Jones (2011; chemistry of commingled bones); Milligan (2011; paleopathology and public health); Ozga (2009; vertebral pathology); Polli (1997; children's health); Richards (1997; a comprehensive overview of the archaeology, history, and demography of the Milwaukee County Poor Farm Cemetery); Rodriguez Pons (1998; vertebral pathologies); Schrubbe (2005; oral health); Schutte (2011; vehicular trauma); Shillinglaw (2010; juveniles); Skinner (2015; entheseal change); Werner (2015; tuberculosis). An additional seven dissertations and two theses will be completed within the next decade. A discussion of the burial population's demographic information as related to this research appears in Chapter 6, to contextualize the results of the strontium isotope analysis. To date, approximately 200 individuals from excavated interments have been linked with specific individuals listed in the *Register of Burial* (Richards 1997; Richards et al. 2016). For a variety of reasons elaborated in the next section, the restoration of identity is a difficult, but not wholly impossible process.

The Archaeology

In August 1991, initial construction stages of the Ambulatory Care Center on the grounds of the Milwaukee County Medical Complex disturbed the Milwaukee County Poor Farm Cemetery. In response, construction was halted and the Associate Hospital Administrator of the County Medical Complex requested permission from the Wisconsin State Historical Society (WSHS) to remove the uncatalogued burials that had been uncovered by the construction (Richards 1997). A directive issued by the Wisconsin State Historical Society questioned how

the project "had advanced to the point of actual disturbance of remains without anticipation of the present problem," (Muller III 1991) particularly because this latest disturbance followed three previous site visits by archaeologists (in 1975, 1979, 1980, *see* Bruhy and Overstreet 1980; Richards and Kastell 1993:xv) and a 1980 report, based on archival data, indicating that "a minimum of 5,000 interments had been made on the County grounds between 1850-1974," (Richards and Kastell 1997:xv). On August 30, 1991, permission to remove the burials was granted by the Society, and consistent with the Society's provision that qualified, professional archaeologists conduct the removal, the Great Lakes Archaeological Research Center, Inc. (GLARC), began fieldwork in September 1991 (Richards and Kastell 1993; Richards 1997:37).

Unfortunately, this was not the first time construction had disturbed the Milwaukee County Poor Farm Cemetery. Shortly after the last interment within Cemetery II (47BMI0076), a period of deliberate 'forgetting' and neglect of the cemetery began. Historical documentation, specifically photographs, suggests that all of the surface evidence of the cemetery's existence was removed between 1925 and 1932. The latest historic map featuring the cemetery was created during the 1930s (Richards and Kastell 1993:61). This map, on file at the Milwaukee Metropolitan Sewerage District, is curated with other documents produced during Works Progress Administration, though the map itself is undated and does not illustrate buildings that were constructed by 1932 (Richards, personal communication, 29 August 2017). Subsequent construction of various trenches, water mains, tunnels, and in 1932, a nurse's residence, disturbed Cemetery II (47BMI0076) to varying degrees. The exact number of removals or disturbances of burials that occurred during the course of these early projects cannot be precisely fixed, however, estimates utilizing available resources project the number to be near 2,985 burials prior to the controlled excavations in the 1990s (Richards 1997:274).

There were three primary areas of recovery during the 1991-1992 excavation: a parking lot to the north, a small knoll to the west, and a lawn area to the south of the former Nurse's Residence, which was demolished while archaeological fieldwork was underway (Richards 1997:41). Excavation was conducted in accordance with construction-related scheduling and impact areas and thus the anticipated number of burials was revised upward as construction progressed (Richard 1997:41). Subsequent laboratory procedures included an inventory and brief description of material culture (including coffin hardware) as well as preliminary stabilization and inventory of human remains. From December 1992 through 2009, Marquette University and a designated principle investigator jointly curated the human remains, all associated material culture, and documentation produced as a result of the 1991-1992 excavation, with the intention of producing a full osteological analysis of the Milwaukee County Poor Farm Cemetery burial population (Richards and Kastell 1993:xviii, 205). In 2009, when the Wisconsin State Historical Society awarded final disposition of the Milwaukee County Poor Farm Cemetery collection to the University of Wisconsin-Milwaukee, this osteological analysis had not been completed.

The University of Wisconsin-Milwaukee Historic Resource Management Services conducted a second excavation, also related to an expansion of the Milwaukee Medical Grounds Complex, in 2013. In this case, permission to disturb was requested and granted prior to any interference with the burial site (for a full project timeline, see Richards et al. 2016:6). The 2013 excavation extended westward from the southwestern edge of the 1991-1992 excavation. Flagging tape from the earlier project was recovered at the base of a previously excavated juvenile interment at the extreme eastern edge of the 2013 excavation (Richards et al. 2016:345). The 2013 excavation was significantly smaller in scale than the 1991-1992 project, with approximately 40% of the number of coffin locations (Richards and Kastell 1993; Richards et al.

2016). The author was a field excavator and laboratory analyst for single adult and commingled remains recovered during the 2013 excavation.

The excavations represent contiguous portions of Cemetery II (47BMI0076). While a full discussion of each excavation's field history and methods is beyond the scope of this research project, general commonalities between the excavations are outlined, with a focus on methods for adult burials, given the nature of the research sample. In each case, burials were located with the aid of mechanical stripping in an east-west direction to expose the grave shafts (Richards and Kastell 1993:55; Richards et al. 2016:38). Burials were mapped at each identifiable corner of the coffin using English units (Richards 1997:44; Richards et al. 2016:38). As described by Richards et al., "Provenience was maintained using a lot number system that assigned a unique identifier to an individual burial," (2016:39). A similar numbering system was operationalized for the 1991-1992 excavation, and the 2013 excavations "began with the number 10000 to avoid duplicating lot numbers" that were associated with burials recovered in 1991-1992 (Richards et al. 2016:39). Each burial was excavated by hand using wooden or bamboo tools and brushes (Richards and Kastell 1993:56; Richards et al. 2016:41). Matrix from within the coffin and from the burial shaft immediately above the coffin lid was passed through a ¼" hardware screen (Richards and Kastell 1993:56; Richards et al. 2016:41). The information collected on burial excavation forms was consistent between the two excavations, including (but not limited to) lot number, grid coordinates, photograph information, coffin shape and dimensions, burial position, associated grave goods, information pertaining to the remains themselves (level of preservation, completeness, estimated sex and age), and general comments (Richards and Kastell 1993:56; Richards et al. 2016:41). Elements were removed and bagged according to a specific order and protocol (Richards and Kastell 1993:60; Richards et al. 2016:41). Human remains, coffin

hardware, and grave goods were bagged and transported from the site separately. Table 1.1 outlines the essential details of each project.

Table 1.1. Summary of major archaeological excavations at the Milwaukee County Poor Farm Cemetery, Cemetery II (47BMI0076) (Richards and Kastell 1993; Richards et al. 2016).

Date of excavation	August 1991- December 1991; March- November 1992	June 2013- September 2013
Location of excavated portion	NE1/4, SE1/4, SW1/4, NW1/4 of Section 28, T7N, R21E in the City of Wauwatosa, Milwaukee County, WI	NE1/4, SE1/4, SW1/4, NW1/4 of Section 28, T7N, R21E in the City of Wauwatosa, Milwaukee County, WI
Project that precipitated excavation	Ambulatory Care Center and related infrastructure	Froedtert Hospital Center for Advanced Care (CFAC) project and related infrastructure
Cultural resource management firm	Great Lakes Archaeological Research Center, Inc. (GLARC)	University of Wisconsin-Milwaukee Historic Resource Management Services (UWM-HRMS)
Project number	91-049	2013-001
Principal Investigator	Patricia B. Richards	Patricia B. Richards
Manuscript on file at the Wisconsin Historical Society (Report title)	Richards, Patricia B. and M. Kastell 1993 Archaeological Excavations at the Almshouse Burial Ground Milwaukee County Poorhouse, Wauwatosa, Wisconsin. *Great Lakes Archaeological Research Center, Inc. Report of Investigations No. 333.* Milwaukee, Wisconsin.	Richards, Patricia B. et al. 2016 Nine For Mortal Men Doomed to Die: The Archaeology and Osteology of the 2013 Milwaukee County Poor Farm Cemetery Project (Froedtert Tract- 47 MI 0527). *University of Wisconsin-Milwaukee Cultural Resource Management Archaeological Research Laboratory Report of Investigations No. 381.* Milwaukee, Wisconsin.
Total area excavated	2.82 acres (includes footprint of former Nurse's Residence and previously disturbed areas)	0.48 acres, including 0.02 acres of previously excavated area from 1991-2 excavation
Temporal span of excavated area	1882-1925	Post 1900
Total coffin locations	1649*	632 + 1 bone dump from previously disturbed graves
Total number of individuals produced from coffin burial locations	1649*	665
Total potential individuals represented (includes commingled MNIs)	1649*	831
Final disposition of human remains and all associated materials	University of Wisconsin-Milwaukee	Not yet established.
* Numbers as of 1997. Numbers will be updated following the completion of osteological analysis (est. Fall 2018) for remains excavated in 1991-1992.		

Both excavations were possible because of the 1984/1987 State Statute 157.70, which is a component of a larger suite of legislation pertaining to the disposition of human remains (Wis. Stat. § 157.70 (2017)). This modern burial law requires reporting of burial site disturbances to the Burial Site Preservation Office, regardless of location on state or private land (Richards 1997:6). Burial sites are divided into two categories; catalogued and uncatalogued sites. As described by the Wisconsin Historical Society, a catalogued burial site is a human burial site believed to still contain human remains, is in a known location (recorded with the county Register of Deeds), and is listed in the Wisconsin Burial Sites Catalog, whereas an uncatalogued burial site is a human burial site that has been destroyed, cannot be located, or has not yet been listed in the Wisconsin Burial Sites Catalog. If the Wisconsin State Historical Society determines that an uncatalogued human burial site likely contains human remains and if the site can be re-identified, it may be added to the catalog. Under Wisconsin state law, catalogued sites receive special treatment, including tax breaks for owners, more severe penalties for disturbance, review of disturbance requests by the Registry of Interested Persons, and the possibility of hearings, appeals, and/or denial of requests to disturb. In both cases, any excavation of a burial site requires prior authorization from the Director of the State Historical Society of Wisconsin, and that such excavations must be conducted by archaeologists qualified to excavate human remains, as designated by the Director (Richards 1997:6). Importantly, penalties, including fines and/or imprisonment, are in place for unauthorized disturbances and any failure to report such disturbances, and as previously described, are more severe for catalogued sites. One consequence of the 1991-1992 excavation was that Cemetery II (47BMI0076) was added to the Wisconsin State Historical Society list of catalogued burial sites.

Because of the current amount of activity and use of the County Grounds, ongoing construction and utility projects frequently necessitate archaeological monitoring under Wisconsin Statute 157.70. Isolated finds are frequent, likely due to previous disturbance episodes. However, it is important to note that there are still extant burials on the county grounds, particularly the portion of Cemetery II (47BMI0076) under present-day Doyne Avenue (an estimated 209 adult-sized graves and 671 juvenile/ infant sized graves, per Richards et al. 2016:5) and Cemeteries I, III, and IV on the grounds.

Since 2009, the University of Wisconsin-Milwaukee Archaeological Research Laboratory has established final disposition for the remains excavated in 1991-1992. The disposition agreement between the University of Wisconsin-Milwaukee and the Wisconsin State Historical Society provides for the return of identified remains to relatives who request the remains. The Milwaukee County Poor Farm Cemetery Project has generated a wealth of bioarchaeological research produced as an element of contract reports, journal articles, theses, and dissertations, and is part of a multi-faceted, multi-researcher effort to restore identities of the individuals once interred at the cemetery (Figures 1.5, 1.6). The data generated by this project allows us further insight into the lived experience of those individuals interred at the Milwaukee County Poor Farm Cemetery, whereby the restoration of personhood is part of a historically holistic approach, and telling the stories of individuals is given equal priority as relating results. Without this statute, our knowledge of the cemetery and those individuals interred within it would be greatly diminished.

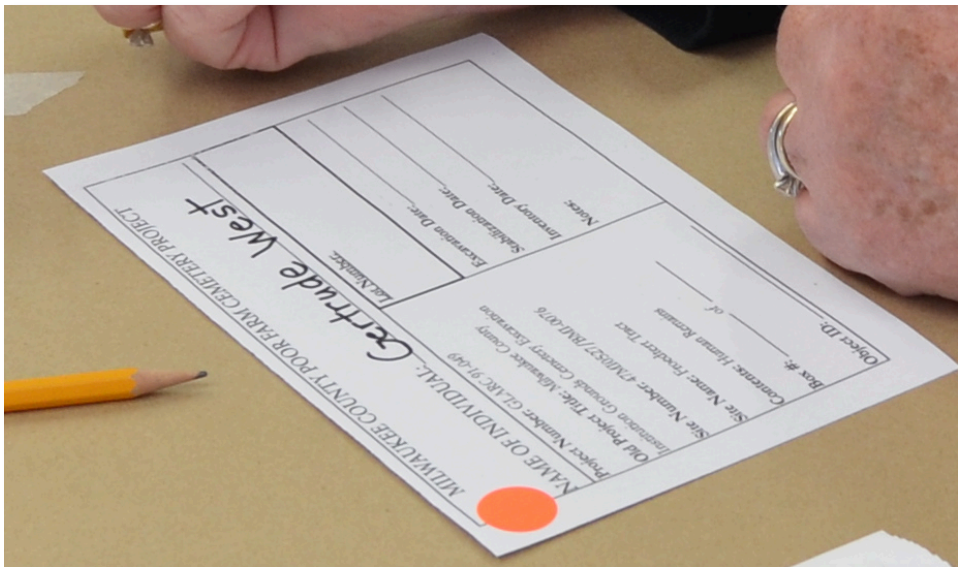

Figure 1.5. Writing the box label for Gertrude West, Burial Lot # 5048. Photo by author.

Figure 1.6. Photo tentatively identified as Gertrude West.
Reproduced with permission from Richards et al. 2015.

Chapter 2: Anatomization and the Law

> "When you get those bodies from the county, you bind yourselves to bury each one of them in a proper way and under its proper name, and by your own admissions you have violated the law," Attorney Eschweiler (*The Milwaukee Journal* [MJ], 16 February 1894).

Anatomization and the law are inextricably linked. Prior to the passage of legislation known as the "Anatomy Acts", those wishing to study anatomy had no legal avenue for obtaining human corpses, and a variety of extra-legal mechanisms arose to fulfill a need. This is not to say that the activities of resurrectionists ceased with the advent of statutory permission; rather, these initial proscriptions created an additional gap between pragmatism and aspiration.

At the heart of this conflict was the struggle to define a legal relationship between the living and the dead. American jurisprudence creates two categories for the dead: person and quasi-property. In Wisconsin, legislative efforts to govern interment and dissection mediated the competing aspirations of medical education and social contract implicit in common law. The archaeological record of Cemetery II (47BMI0076) attests to the resulting void, providing evidence of divergent interests between the poor and professionals, individual and institutional decisions, and the reality of "decent burial".

Dissection and Anatomization

Dissection and anatomization are contextualized and may be understood in two ways: contemporary attitudes about the practice of dissection itself, and the close association between dissection and the poor. Sappol describes anatomized dissection as a metaphor for class relations: "the poor were meat to be preyed upon and eaten by the upwardly aspiring professional elite," (2002:131). The meat-corpse analogy is illustrated in the satirical, but morbid, humor of the day, "… Now where's the difference? to th' impartial eye / A leg of mutton and a human thigh …," (Nemerov 2001:110). The contemporary conflation of the status of the human body with

slaughtered meat exemplifies just how far the "degrading and sacrilegious" practice of dissection was seen to be from Christian attitudes about the body (Guernsey 1882:519; Nystrom 2011; Sappol 2002:104). Unlike Christian burials that placed intact bodies out of view to await resurrection, dissection and anatomization both exhibited and were exhibitions of bodies, through anatomy lessons for medical colleges (Hartwell 1881:13; Sappol 2002:103). Coupled with, and to a certain extent, complementing the departure from Christian practice was the association of dissection with punishment. The punitive associations of dissection were more than simple overtones; dissection was explicitly added as further punishment in death to those convicted of murder (Massachusetts 1835), those who died in state prison or jail (Maine 1869), and those convicted of other offenses resulting in capital punishment, including arson and burglary (New York 1789) (Hartwell 1881:29-31). Wisconsin, the first state to permanently abolish capital punishment for all crimes in 1853, did not share this trajectory of dissection law.

Unlike the stigmatizing dissection for medical knowledge, medical investigation of the body in the form of an autopsy carried an entirely different social meaning (Sappol 2002:103). Autopsies were performed privately, medical curiosity was limited to the cause of death, and no shame was associated with a judicially authorized event (Sappol 2002:103). Indeed, having the "importance to warrant" a medical explanation of a death was the prerogative of the aristocracy and gentry, and it was possible to pay for an autopsy as a mark of social distinction even if one could not afford a churchyard burial. While autopsy was a service available to privileged members of society by the judiciary, those in the medical profession attempted to frame dissection as a service to society, and particularly to the poor, even though the poor were in reality the most likely to become the "prey" of nineteenth century medical colleges (Sappol 2002). An 1829 petition to the Massachusetts State Legislature argued, "so far as the poor are

concerned, it is for their especial benefit …the diseases and lameness of many paupers have passed from a curable to an incurable condition for the lack of surgical skill which could only have been derived from a knowledge of practical anatomy," (Hartwell 1881:23). This sentiment was expressed during a period of increasingly "liberal" and legal means for medical schools to acquire cadavers beyond those convicted of serious crimes as Anatomy Acts began to be passed (1789-1947) state-by-state (Garment et al. 2007:1001; Sappol 2002:123-4).

Once unclaimed bodies, particularly including paupers', became legally obtainable, a new public logic for dissection arose. A *Washington Post* editorialist exclaimed in 1887,

> "Why would those who have made war on society or been a burden to it be permitted to say what shall be done with their remains? Why should they not be compelled to be of some use after death, having failed to be of value to the world during life? If all dead felons and paupers were assigned straightaway to the nearest medical college, they would be able to contribute a trifle in the way of compensating the world for the waste and loss they have inflicted on it," (*The Washington Post* [WP], 28 April 1887:2).

The association between the destitute and dissection was reaffirmed; and Anatomy Acts offered yet another deterrent against indigence beyond the avoidance of the potter's field (Garment et al. 2007:1001).

American Jurisprudence

There is little U.S. federal law pertaining to the disposition of human remains, including dissection as disposition. Instead, common laws, consistent from state-to-state, and statutory law, widely varied, provide legal definition (Marsh 2015a:3). As described by Marsh, U.S. common law in this area "represents the unique adaptation of the legal precedent and social norms established by seventeenth century English ecclesiastical law to the American experience," (2015a:3). In the U.S., the courts of equity and expanded rights for decedents supplemented the absence of an established church while maintaining many of the component social norms of

English law (Marsh 2015a:3; Laqueur 2015). Thus, the laws for disposition of human remains represent a unique history of controversies and court rulings, rather than cohesive doctrine (Marsh 2015a:3).

This research examines three specific elements within the larger sphere of the disposition of human remains: the translation of common law into statutory proscriptions for decent burial, anatomization prior to/as disposition, and the legal status of the corpse (property or person). The statutes of interest for this research codify the precepts of common law, respond to disposition of those precepts, and are regulatory (in the sense of defining the parameters of dissection). A full treatment of the law of human remains, while beyond the scope of this project, has been the subject of several influential legal texts by Perley (1896), Jackson (1950), and Marsh (2015b), among others, and works by Habenstein and Lamers (1955), Mitford (1963; 1998) and Sloane (1991) provide valuable context for the development of laws pertaining to human remains (Marsh 2015a).

Hugo Grotius, a seventeenth century legal scholar and "founder of modern international law" argued "the denial of burial was so fundamentally at odds with any conceivable norm- with being human- that it was a just cause for war," (Laqueur 2015:86). Utilizing the opinions and practices of the premiere authorities among ancient authors, Grotius' work is a thoughtful representation of Western thinking about burial (Laqueur 2015:86). Informed by Seneca and Quintilian (who called burial "a piece of publick humanity"), Grotius states, "Hence it is that the office of burial is said to be performed not so much for the man…as for mankind, that is for human nature," (2012:267; Laqueur 2015:86). Grotius' reference to Roman scholars underscores the endurance of decent burial as a concept in Western tradition. Decent burial in practice is pre-Judeo-Christian in origin. As recently as 2004, the United States Supreme Court acknowledged

and reaffirmed this, stating, "The power of Sophocles' story in *Antigone* maintains its hold to this day because of the universal acceptance of the heroine's right to insist on respect for the body of her brother," (*Nat'l Archives & Records Administration v. Favish*, 541 U.S. 157, 168).

English courts continually upheld the right to a "Christian burial", most famously in *Regina v. Stewart* (Naffine 1999:100). The court found that common law ascribes to some person the responsibility of burial for the bodies of those dying in a state of indigence (Naffine 1999:100). Here, decent burial was truly a Christian burial in that it was "synonymous with burial in the parish churchyard," (Marsh 2015a:5). Though many social norms were held in common, some elements of English legal precedent were inapplicable to the American experience (Marsh 2015a:10; Marsh 2015b:5). The *Examination on the Law of Burial* (1856), commonly referred to as the Ruggles Report, provided "foundational principles of the U.S. common law of human remains," (Marsh 2015a:12). Corpses and their burial were removed from ecclesiastical cognizance and the right to burial was given legal recognition and protection (Marsh 2015a:13). Guernsey, another frequently cited early legal authority, reiterated much the same point made by Grotius, Coke, and Blackstone, "A dead body belongs to no one, and is, therefore, under the protection of the public," (1882:521).

While noble, "civilized" feelings may have naturally prompted correct treatment of a dead body, statute provided the authority to compel burial where sentiment was lacking (Kinzie 1895:11). Kinzie argues that it is only proper that every man feels reasonably certain that he will be decently interred even if he is not reasonably certain that men are "even humane" (1895:11). Subsequent legal cases expanded the principles of the right to a decent burial, including *Kitchen v. Williamson*, 26 Pa. Super 75 (1904); *State ex rel. Commissioner of Transportation v. Medicine Bird Black Bear White Eagle*, 63 S.S. 3d 734, 746 (Tenn. Ct. App 2001); *Seaton v.*

Commonwealth, 149 S.W. 871 (Ky. App. 1912); *Thompson v. Deeds*, 61 N.W. 842 (Iowa 1895); *Thompson v. Hickey*, 8 Abb. N. Cas. 159, 59 How. Pr. 434 (N.Y. Sup. 1880) (Marsh 2015a:40). Under modern U.S. common law, decent burial means "the right to an orderly interment in a suitable place," (Marsh 2015a:5).

The legal status of a corpse has occupied the English and American courts for some time. The nuance of person, property, or neither is of some importance: both person and property are positive legal presences, but "neither" is not, begging the question, how might one define a legal relationship to the indefinable? The fate of dissection applied as a punishment (to a person) or seizure of a dead body by creditors to relieve a debt (as property) were simultaneously possible in English law prior to 1804 (Kuzenski 1924:18; Naffine 1999:96). While similar seizure laws were abandoned early in U.S. legal history, confusion persisted, due not in small part to differing philosophies of what constituted property and the loss of ecclesiastical influence (Kuzenski 1924:18; Marsh 2015a). Early attempts in England, such as *Hayne's Case*, took a circuitous route: a dead body was not a person, "but a lump of earth", and because a corpse was not a person, it could not own property. Sir Edward Coke's commentary in this decision is frequently cited as establishing the no-property-in-a-corpse rule (*nullius in bonis*) (Guernsey 1882; Naffine 1999:97). Blackstone concurs, reasoning that property is recognized in monuments, but not in ashes or bodies (Kuzenski 1924:18).

If a corpse was not property, it could not be bought, nor its theft punished. Thomas Southwood Smith's 1824 pamphlet "Use of the Dead to the Living" provided much of the intellectual heavy lifting used to justify legalized dissection. Smith, an executor and ally of Jeremy Benthem, reviewed earlier work written by the Glasgow ophthalmologist William Mackensie, *An Appeal to the Public and the Legislature, on the Necessity of Affording Dead*

Bodies to the Schools of Anatomy by Legislative Enactment (Laqueur 2015). Importantly, Smith diverged from Mackensie on how far to go to ensure a supply of cadavers, providing a more palatable, and thus legislatively useful alternative. The result was the Warburton Act (Great Britain, 1832) and Smith's influence can be seen in the first American Anatomy Acts as well: acts in Massachusetts, New York, and Pennsylvania initially limited legalized dissection to large population centers (with ample material) (Laqueur 2015:359; Sappol 2002:123). State intervention represented a culturally legitimate solution, but conflict between statute and common law would force courts to continue to entertain the question of the dead body as property.

The majority of historic legal decisions in the United States explicitly find that there is no property in a corpse: *Guthrie v. Weaver*, 1 Mo. App. 136, 141 (1876); *Meagher v. Driscoll* 99 Mass. 281, 284 (1868); *O'Donnell v. Slack*, 55 P. 906, 907 (Cal. 1899); *Williams v. Williams*, L.R. 20 Ch. D. 659 (1881-82) (Marsh 2015:36-37). Some exceptions introduce the possibility of a quasi-property interest: *Larson v. Chase*, 50 N.W. 238, 239 (Minn. 1891), *Osten v. Southern Ry. Co*, 142 S. E. 50; *Pierce v. Proprietors of Swan Point Cemetery*, 10 R.I. 227 (1872) (Kuzenski 1924; Marsh 2015a). Kuzenski summarizes what is at the crux of the issue, "The wide divergence of opinion lies in whether there is that right to possession which apparently is an incident of an absolute or qualified property interest," (1924:17). As Kuzenski explains, "property- the right to a thing- and the subject of property- the *res*" are not identical, (1924:19). Thus a qualified, or quasi-property, interest focuses on rights, as in the (temporary) right to possession and disposition, rather than ownership, with the corpse as a subject of property. Importantly, there are ethical reasons to argue against the corpse as a subject of property: the legacy of slavery, commodification of human beings, and proprietary interests in the parts (and

whole) of a body, subjecting the least-advantaged "to almost irresistible economic pressures," (Naffine 199:103).

The development of the quasi-property right represents an uneasy compromise to fill a custody vacuum left in common law by the lack of a state church (as in English legal tradition). Bray describes this position as "formally opposed but functionally similar to English law," (1990:225). In the American case, this prevents commercial exploitation while also enforcing the rights of relatives or kin (Bray 1990:225). For our purposes, it can be reasonably argued that in the period between death and disposition, there is a state-regulated quasi-property interest on the part of medical colleges in lieu of relatives or kin. Logistically, this also allows for damages to be awarded to atypical claimants. Indeed, penalties for failing to yield an unclaimed body once applied for (thus asserting the quasi-property interest of possession and *eventual* disposition) began to be introduced at the turn of the century. Clark argues the personhood interests and agency of the deceased and their kin are disrupted when the state assigns "identity in death" (2005:50). The designation of "medical cadaver" represents an imposition of identity by the state, as does the preceding designation of "unclaimed", "poor", "insane", or "convict" that legally enables "medical cadaver" in the first place. In the end, constructing a strict dichotomy between person and property, subject and object, may obscure both the nuance apparent in practice and the changing state of the body itself as it moves through the "afterwards" of different institutional realms.

Wisconsin

The laws that have governed the formation and our understanding of the Milwaukee County Poor Farm Cemetery essentially coalesce into two categories: acts, statutes, and rules that describe how a person is interred and acts, statutes, and rules that describe how an individual

might come to be disinterred (in particular, excavation). Our sources of information are Wisconsin laws, statutes, Milwaukee County rules, and the ancillary documentation created as a result of those legislative actions that include death certificates, Coroner's inquests, papers published from medical colleges, newsletters describing academic conferences and activities of the pathology lab, County budgets, and newspapers.

In 1838, the Wisconsin Territorial Legislature passed Act 22, "For Relief of Poor", providing for "decent burial" of the poor. The "decent burial" of the poor was a perennial mandate as Wisconsin gained statehood in 1848, and continues today as the Wisconsin Funeral and Cemetery Aids program. Interestingly, as legal provisions for poor relief of the living became more elaborate in state law, the legal provisions for burial that were contemporary with Cemetery II (47BMI0076) did not. This necessitates an interrogation of what exactly a "decent burial" was meant to entail, particularly when we consider legislated differences for interments occurring at the public expense.

Menderson argues, "the concept of law *must* depend on a notion of responsibility ultimately derived from elsewhere," (1999:6). While the law in Wisconsin proscribes a "decent" burial, a "decent and proper" burial, or a "decent and respectable" burial, it does not explicitly define what constitutes decent, proper, or respectable. The sole elaboration designates permitted expense, presence of a headstone, and location (Table 2.1). For example, if veterans are to receive a "decent and respectable" burial, but may not be buried in a cemetery used exclusively for paupers, and the poor are to receive a "decent" burial, then burial in a pauper's cemetery may be legally decent but it is not respectable. What is meant by the phrase "decent burial" is culturally, temporally, and legislatively contingent, and begs the question, were the poor considered "decent" folk?

Table 2.1. State statute descriptions for interment by category.

Category	Veterans	Insane	Strangers	Convicts	Poor	Dissected
Type of burial	"decent and respectable"	"decent and proper"	"decent"	"decent"	"decent"	"decent"
Location	*Not* a cemetery used exclusively for the burial of paupers	Not specified	Not specified	Not specified	Not specified	Not specified
Expense	Not less than $35 but not to exceed $50	Not to exceed $20	Not specified	Not specified	Not specified	Not specified
Headstone required?	Yes	No	No	No	No	No
May be dissected if unclaimed	Yes	Yes	No	Yes	Yes	----------

Source: Wis. Stats. Secs. 604x *(insane)*; 1512 *(poor)*; 1529g-i; *(veterans)* 1437-d *(dissection)*; 4877 *(strangers)*; 4954 *(convicts)* (Hirschberg 1912).

"Decent" is not defined at the state level, but is left to county-level rules and regulations, or the individual interpretation of inference. Milwaukee County rules provide more insight into the exact particulars of what a decent burial entailed in 1880, 1886, 1894, 1900, and 1912. Alternately referred to as Rule 8 or Rule 17, this was a component of a collection of rules that described the responsibilities of the Superintendent of the County Farm (among other duties). Rule 17 provided for the following elements in a Milwaukee potter's field burial: a painted and numbered headboard, a grave no less than six feet deep, all necessary permits, and a paper record of the burial specifying the name, cause of death, date of death, and the number of the deceased's grave (Richards et al. 2017). Importantly, the Milwaukee County rule did not describe any penalties for failing to provide such an interment, nor did state laws requiring a "decent burial" or "afterwards decently buried".

Each of the interments at the Milwaukee County Poor Farm Cemetery would have been subject to the proscriptions outlined in this rule, though many different institutions, including the

Poor Farm, morgue, asylums, County Hospital, and medical colleges would have interred bodies at the cemetery. This creates a somewhat unusual situation wherein at least two state provisions for burial "decent and proper" (for the insane) and "decent" (for strangers, convicts, the poor, unclaimed, and dissected) would have in practice resulted in much the same type of burial externally.

Because law and public conceptions of dissection each influence the individual and institutional decisions physically manifested in the archaeological record, it is worth considering the social discourse and events contemporary with major changes to Wisconsin's anatomy act. Archaeologically, temporal differences exist in the types of deviation from "expected" practice, and the "hidden practices of anatomizing individuals while appearing to follow legally legislated humane burial practices…negated the aspirations," of Milwaukee County's Rule 17 (Richards 2017:254).

Wisconsin's Anatomy Act 1868

In the years leading up to the passage of Wisconsin's first Anatomy Act, newspaper articles expressed some degree of ambivalence about dissection. A reprinted travel account of one Miss Fuller's encounter with "a pleasant parlor inmate", or rather, the skeleton of Dr. Jeremy Bentham, fitted with wax mask and stuffed clothing, concludes with the statement, "It is well known that Bentham, in order to oppose, in the most convincing manner, the prejudice against dissection of the human subject, willed his body to the surgeons…" (Milwaukee Daily Sentinel [MDS], 8 February 1860). This might be contrasted with an excruciatingly detailed tale of "dissection sickness", a nearly fatal malady that afflicted Professor Carnochan of New York (MDS, 12 December 1860). While Professor Carnochan bested the "morbid corpusties", a Brazilian colleague was not so lucky, having perished "from a dissecting wound in the thumb,"

(MDS, 12 December 1860). A description of a Philadelphia dissection room in 1867 directly confronts the source of the polluting anatomical material, "The price paid resurrectionists for a subject generally is from $15 to $20…The colleges are largely supplied with the bodies of abandoned women, many of whom have been known to sell themselves for this purpose, before death, for the sum of $50!" (MDS, 21 November 1867). The tone is at once sympathetic to "ill-used" innocents and mildly censorious of the "peals of laughter" and "pitching" of organs by medical students (MDS, 21 November 1867).

Largely absent from the social discourse, as reflected in contemporary newspapers, was an explicit connection between the attendant medical realities of the Civil War and the ongoing push for legalized dissection. Sappol argues that the "cultural politics of anatomy" fell dormant during the Civil War as potential medical school pupils (and instructors) were engaged with practical training out of necessity, and reform arguments were invigorated with the authority of war experience without making direct reference to the war itself (2002:238). Rather, overtones of the Victorian fascination with death and the beautiful death movement are more frequent, as exemplified in discussion of "alabaster innocents" and Bentham's corpse as a tourist attraction. Newspapers even ran gothic tales that wove romance and the dissecting knife together, like "Doubly Married: A Romance of Lima" (MDS, 23 November 1869).

In local matters, the 1865 discovery of two severed fingers in Chicago inspired a recollection of a similar discovery in the Second Ward of Milwaukee "several years ago" (Cleaver 1865). While the remembrance took pains to praise the "inquisitive pup" for locating the severed hand (rather than the city police), a telling statement provides clues to the state of dissection in Milwaukee at the time.

> "But the Milwaukee hand *was* accounted for- people did talk of a dissecting room. And some people knowing that there is a medical college in Chicago, and that

> efforts have been made quite recently in this city (Milwaukee we mean) to procure bodies for dissection in Chicago, and *this* may account for some persons beginning to bury their dead on their own premises or lots within thickly populated parts of our city…" (Cleaver 1865: Issue 304; emphasis in original).

By February 1868, a *Sentinel* correspondent introduced a description of Dr. D. C. Davis' bill to legalize dissection with the following comment, "This, in the opinion of your correspondent, is an important measure and must result in public good if passed; for whatever tends to the advancement of science- and especially of medical science- must necessarily be of advantage to all," (MDS, 14 February 1868).

Wisconsin's first Anatomy Act law made provision for the unclaimed dead to be made available for "the advancement and promotion of anatomical science within this State," (1868 Wis. Laws 53). Officials in possession of an unclaimed body notified appropriate medical schools that would in turn make a written request for the consignment of the remains (Richards et al. 2016). However, in this first iteration of legalized dissection law, public officers were not to deliver a body to a surgeon until friends or relatives were notified or until notified persons expressed willingness for the body to "be so disposed of" (1868 Wis. Laws 53). The bill was approved February 29, 1868, but provided no framework for "disposal" of remains. Less than a month later, a liquor cask containing dissected human remains was discovered on the ice in the river near the Rough and Ready Mill in Watertown, Wisconsin (MDS, 19 March 1868). The lack of specific requirements for interment (or disposal) of bodies following dissection would become a problematic oversight, as would the relatively vague term "public officers" and absent mechanisms for medical colleges to obtain bodies for dissection.

"Afterwards Decently Buried" (1878-1889)

The Revised Statutes of 1878 amended and consolidated Chapter 53 into Statute 1437. The Annotated Statutes of 1889 explicitly recognized only one of the major textual changes: the

provision that strangers, or persons who, in their last sickness requested burial, not be delivered for dissection (Wis. Stat. § 1437 (1889)). A second inserted clause, that "the remains shall be afterwards decently buried without public charge," was not highlighted as a change beyond the annotation "Is secs. 1, 2 and 3, ch. 53, 1868, combined and rewritten," (Wis. Stat. § 1437 (1889)). Placing the burden of burial on the dissectors no doubt reduced the costs for the state, which would have ordinarily assumed responsibility for the burial of the unclaimed and indigent under pre-existing statutes that explicitly required "decent burial" for these groups (Richards et al. 2017). However, for the purposes of this research, a fundamental truth emerges: by the time the first interments occurred in Cemetery II (47BMI0076) in 1882, decent burial for dissected remains was state law.

Amend the Law (1895)

Nationally, 1878 marked a highwater mark for body-snatching scandals and though many states had already passed a bill legalizing dissection, adverse public sentiment toward medical colleges grew (Sappol 2002). Greater numbers of medical colleges were established with attendant requirements for clinical material and the accelerated demand for bodies could not be met through existing law. The supply of unclaimed bodies, the subjects most state laws currently consigned for dissection, was not enough. Alternatively, other obstacles existed in the laws that provided for individual surgeons or medical societies to claim bodies, but not medical colleges. Early calls to "dissect the poor", similar to the 1887 *Washington Post* article referenced earlier, came from unusual quarters. In response to an epidemic of grave robbing in Ohio, Frederick Brooks, Rector of St. Paul's Church, found "five hundred and thirty-two (532), all of whom were paupers, very few of whom would be claimed" would be a more than adequate source of material (*The Daily Cleveland Herald* [DCH], 21 December 1870).

In Milwaukee, supply anxiety was reflected in a series of minor scandals, culminating in the 1894 Judson investigation. In 1879, two graves of a couple recently buried at the "Potter's Field" were disturbed and the remains taken (MDS, 18 July 1879:8). Given the date, the reference to Ludington's Farm, and the relative shallowness of the graves in the account (approximately three feet), this event likely took place at Cemetery I (47BMI0173) (Richards 1997).

The case of Frederick Wiese received considerably more attention, due not in small part to the rivalry between *The Milwaukee Sentinel* and the *Milwaukee Daily Journal*. Each paper simultaneously published radically different accounts, agreeing only in the basic details: a body was found in a property located above the Y.M.C.A, the body was that of one Frederick Wiese, member of Co. C, One Hundred and Third New York regiment, and that his remains were consigned for dissection through a request made in accordance with state law (Milwaukee Daily Journal [MDJ], 21 March 1885; The Milwaukee Sentinel [MS], 21 March 1885:3). Dramatic accounts of midnight investigations and suggestions of collusion among doctors at the County Hospital were situated between barbs about reporters' credulity (MDJ, 21 March 1885, 26 March 1885; MS, 21 March 1885:3). The escapade concluded a few days later when it was determined that Wiese could not be legally dissected and would be buried, "in accordance with the desire of the deceased," (MS, 25 March 1885:3). The episode as a whole exposes a murky gap in laws for final disposition. If Wiese had been dissected, where and how would his remains have been interred? Which status would have held priority for interment- his status as a veteran or that of being an anatomized corpse? The laws for disposition and the financially responsible parties were different for these two categories. State law required honorably discharged veterans without means to be interred by the state in a "decent and respectable manner in a burying-ground not

used exclusively for the burial of paupers," (MDJ, 21 March 1885) but did not prohibit the dissection of veterans, thus leaving a window for potential conflict. If Wiese had been dissected, and his body interred in the potter's field along with other anatomized individuals, would the state have transgressed its legal obligation to an honorably discharged indigent veteran?

The Judson inquiry is a testament to law as discourse. This scandal, which occupied the major papers in Wisconsin almost daily for months, became the primary impetus for changes to Chapter 58, including the explicit ability of medical colleges to claim bodies for dissection and financial penalties for failing to produce bodies for dissection, and changed the burial-by-contract system at the Milwaukee County Poor Farm.

Early in January 1894, *The Milwaukee Sentinel* announced a meeting of the Committee on Poor of the County to investigate the County Undertakers, J. B. Judson & Co., following news that C.E. Judson had engaged in several dubious activities, including turning remains over to the medical college for dissection rather than burying them, billing the County for nonexistent burials at the potter's field at the County Poor Farm, and further accepting payment from the college authorities to inter corpses following dissection (23 January 1894). C. E. Judson's activities came to light when the daughter of Mrs. Augusta Koch attempted to locate her mother's grave and failed to obtain this information from the morgue or Superintendent Wetenkamp (of the County Poor Farm) (MS, 23 January 1894). By January 31st, a formal investigation into Judson's activities was ordered by the County Board, based on District Attorney Hammel's legal opinion that only the Coroner, and not Judson, had the right to turn over remains to the medical colleges (MS, 31 January 1894:3).

From the onset, the Judson investigation was acrimonious. On the first day of testimony, Dr. Sifton of the Wisconsin Medical College was quoted as saying, "But we will have those

bodies. Science demands it and the law sanctions it, and we are going to see that we get our rights," (MJ, 1 February 1894:3). It became quickly apparent that the scale of Judson's activities was far larger than initially thought; thirty-four, rather than five, bodies were unaccounted for, and individuals who were to be interred elsewhere were buried at the Poor Farm (MS, 2 February 1894:3; *Yenowine's Illustrated News* [YIN], 3 February 1894). Dr. Burgess of the Wisconsin Medical College testified that Judson would be paid $5 for each body delivered, but that the resolution of payment had not been adopted by the medical college's Board of Directors (MS, 3 February 1894:5). On February 5th, as further discoveries came to light, it became clear that "a wholesale traffic in bodies has been carried on," and Judson went missing twenty- four hours later (MJ, 7 February 1894; MS, 8 February 1894:3). In his absence, testimony continued. An unidentified physician suggested that the special committee of the County Board look into the records of previous County undertakers, saying,

> "Mr. Judson is not the only one who has erred by giving bodies to the physicians. It has been the custom in this county for medical students to obtain their bodies from the county undertaker. It is a fact that if all the graves at the county farm were opened over one-half of them would be found to be empty. Years ago it was the practice of medical students to go to the county farm regularly and rob the graveyard there of bodies for use for dissection purposes. This custom, hower [*sic*], became a difficult and rather dangerous one, and, in recent years, the bodies have always been obtained from the county undertakers," (MS, 08 February 1894:3).

On February 13th, the special committee issued its final report, resulting in the abolishment of the contract system for burying paupers, placing the responsibility of obtaining coffins and interment in the hands of the Superintendent of the County Poor Farm (MJ, 13 February 1894). In March, the Wisconsin Medical College made a formal written request for bodies for dissection, but in lieu of the Judson scandal and the subsequent refusal of Dr. Burgess to return five individuals' remains until after dissections had concluded, the request was refused (MS, 19 March 1894:7;

MS, 30 March 1894:4). Burgess and Coroner Ott continued at loggerheads over the intervening weeks, with Ott refusing to deliver corpses to Burgess for dissection (MS, 17 April 1894:3).

The Judson investigation provided the public with gruesome details of mutilated bodies, in flaming fears of dissection of "respectable" individuals by arrogant doctors who made back room deals. With the specter of "corpses at any cost" raised, calls were made to amend the law, to address the dual concerns of providing sufficient anatomical material for medical colleges while ensuring that convicts, the insane, paupers, and the unclaimed would be the first to meet the knife (MJ, 3 March 1894:14). Chapter 117, passed in April 1895, added the following provisions: the ability of medical colleges to claim bodies, a fine of $50 to be recovered in an action if provisions of the act were violated, and prohibitions against delivering bodies outside the state (1895 Wis. Laws 117).

Dissection in a New Century (1903)

Medical colleges in Wisconsin relied on ready access to cadavers to teach anatomy and comply with official curricula. The stress of inadequate supply no doubt contributed to the failure of many early schools, and Milwaukee was no exception. Beginning in the 1840s, a number of medical colleges had opened, only to quickly fail (Frank 1915:215). A *Milwaukee Daily Sentinel* article called attention to the issue, arguing, "Keokuk, La Crosse, Columbus, Ann Arbor and the other small places where colleges have been organized, are not proper locations," due in large part to the lack of a substantial pauper class, the "homeless, friendless class" abundant in the largest cities (16 December 1878:4). A second concern was competition from the so-called diploma mills. In 1896, Wisconsin Attorney-General Mylrea took action against the Wisconsin Eclectic Medical College, Milwaukee University, and the Wisconsin School of Dentistry (Earles and Nielson 1896a:267). Each institution offered diplomas for cash, and in the

case of the Wisconsin Eclectic Medical College, for the nominal sum of $35 (Earles and Nielson 1896a:267).

It was not until the 1890s that two medical colleges successfully achieved a foothold in Milwaukee: the Wisconsin College of Physicians and Surgeons (1893) and the Milwaukee Medical College (1894) (Flexner 1910:318; Frank 1915:218). The following notice appeared in the *Milwaukee Medical Journal*, three years after the stock company was founded:

> "Milwaukee Medical College is humming with 209 matriculates. Not a bad showing for the third year. The teachers are all doing good, earnest work, and the clinics are flourishing. There is *ample clinical material for all the departments* [emphasis added], and the students are correspondingly happy. The classmen have organized a football team, and are practicing preparatory to challenging the Rush team," (Earles and Nielson 1896b:378).

The picture did not remain rosy for long. Even as the Milwaukee Medical College was granted legislative imprimatur to receive bodies, it was simultaneously under investigation by the American Medical Association (Simmons 1903:386). The investigating committee found that the Milwaukee Medical College had accepted students with inadequate educational credentials, students were not required to complete a full, four-year course of study and in some cases, received diplomas after demonstrating "educational unfitness", and deficient facilities for the study of anatomy, among other issues (Simmons 1903:386). The college was censured by the American Medical Association (Simmons 1903:386).

Chapter 406, enacted in May 1903, struck out "the whole of" Section 1437, creating the largest textual changes to the original Anatomy Act to date (1903 Wis. Laws 406). While the demands of an increasing number of medical colleges were reflected in previous changes to the law, it can be argued that the 1903 changes reflect the increasing professionalization and commercialization of dissection. The penalty added in 1895 for violating the provisions of the Anatomy Act was rewritten and expanded, outlining how and in what circumstances a medical

college could claim damages as an aggrieved party for the interruption of their quasi-property right to an unclaimed corpse. In typical cases, damages for 'emotional distress' could be awarded to relatives for the interruption their temporary right of possession prior to interment (Kuzenski 1924). This raises the question, when medical colleges were aggrieved, was it for the loss of a valuable commodity that could be neither bought nor sold?

Wisconsin was divided into the Eastern and Western judicial districts, designating specific institutions in each district as having the primary claim to any unclaimed or "donated" body (Table 2.2). A tiered system of notifications, permissions, transportation requirements, and liabilities for expenses was outlined for each judicial district. Measures to stem the spread of contagion were added, prohibiting the dissection of any person dying from smallpox, diphtheria, or scarlet fever (1911 Wis. Laws 406).

Table 2.2. Judicial Districts of Wisconsin, 1903 (1903 Wis. Laws 406).

Eastern Judicial District	Western Judicial District
Joint primary claim: • Milwaukee Medical College • Wisconsin College of Physicians and Surgeons Secondary claim: • Any other duly incorporated college, medical college or medical school in the Eastern judicial district	Joint primary claim: • University of Wisconsin (Madison) • Any other duly incorporated college, medical college or medical school in the Western judicial district Secondary claim: • Milwaukee Medical College • Wisconsin College of Physicians and Surgeons

With regard to death notifications made by public officers, "relatives or kindred" replaced "relatives or friends" as claimants and now, the relatives, kindred, or "anyone in their behalf" could claim a body (1903 Wis. Laws 406). While this change provided some additional measure of flexibility, it also negated an entire class of relationships, a particular hardship for recently arrived immigrants without local family. A second potential hardship existed in the form

of a new financial impediment to claiming a body. A 14-day window existed to claim a body: within the first 48 hours, a body could be collected without fee, but if a body were collected in the next 12 days, the individual claiming the deceased would have to reimburse the state university or medical college for expenses incurred during embalming for preservation purposes (1903 Wis. Laws 406).

Lastly, the possibility of cremation as disposal was introduced for the first time, as well as the provision that disposal be in compliance with regulations as prescribed by the state Board of Health (1903 Wis. Laws 406). However, decent burial or cremation only applied to "the remains of such body not so used", potentially opening up the possibility of legal specimen curation (1903 Wis. Laws 406). The use of the Milwaukee County Poor Farm Cemetery by medical colleges and other medical establishments is documented in the historical record, and both a crematory and pathology museum for medical specimens were among the facilities on the county grounds (Richards et al. 2017; Richards and Kastell 1993:36).

Consolidation (1919)

When Abraham Flexner issued his report on the state of medical education, there were three medical schools in Wisconsin: the University of Wisconsin College of Medicine, the Milwaukee Medical College (which, by 1910, had nominally become the medical department of Marquette University), and the Wisconsin College of Physicians and Surgeons (by this time, nominally the medical department of Carroll College) (1910:317-318; Marquette 1919:20). Flexner found "the two Milwaukee schools…without a redeeming feature," and when speaking of the College of Medicine at Madison, said "nothing worse could ever happen to it than that it should be rounded off with a clinical end at Milwaukee," (1910:319). "Utterly wretched" clinical facilities, poor record keeping, a lack of teaching adjuncts, minimal or no laboratory equipment,

and, in the case of the Wisconsin College of Physicians and Surgeons, the absence of even a complete skeleton helped earn both schools a Class C rating, "Colleges requiring a complete reorganization to make them acceptable," (1910:233-234). Frank, citing a 1913 editorial from the Wisconsin Medical Journal, describes the recommendations of the Council on Medical Education for Milwaukee, one of which was a merger between the two medical schools of Milwaukee (1915:223). After failing to receive a satisfactory account of what actions would be taken to raise the rating of Milwaukee Medical College, the students left *en masse* and enrolled in the Wisconsin College of Physicians and Surgeons (Frank 1915:224; Wisconsin Medical Journal 1913). While the Wisconsin College of Physicians and Surgeons was not necessarily rated any higher at this point, the students' actions did result in the recommended consolidation of schools.

All together, the Milwaukee schools had 228 students in 1910 (Flexner 1910). In the entire period between 1895-1913, Milwaukee County officials provided 283 individuals to the Milwaukee Medical College and 148 individuals to the Wisconsin College of Physicians and Surgeons (Drew, personal communication; Richards 2015:2). If supply remained relatively consistent over this 18-year period, the schools would have received an average of 15 and 8 cadavers, respectively (Richards 2015:2). Given a combined student body of 228, it is unlikely that the legally recorded supply came anywhere close to meeting the colleges' needs (Drew, personal communication; Flexner 1910:317-318; Frank 1915:220).

In 1912, Marquette completed the full acquisition of the Milwaukee Medical College and in 1913; Marquette purchased property from Wisconsin College of Physicians and Surgeons (Frank 1915:219; Marquette 1919:20). As described in the university bulletin, "thus the two medical colleges of Milwaukee were merged in the new Medical Department of Marquette

University," (Marquette 1919:20). Marquette was rated "Class A" by the American Medical Association in 1915 (Marquette 1919:20). The *Marquette Bulletin* states, "great care is taken to afford adequate opportunity and excellent material for dissection and the responsibility for its utilization is placed squarely on the student," (Marquette 1919:241). The same bulletin provided a cadaver to student ratio of 1:5 in 1917 and 1:2 in 1919 (Marquette 1919:27, 241). Marquette's central role in medical education for Wisconsin's eastern judicial district was recognized in state law in 1919, when Chapter 272 replaced Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons with Marquette University as the primary recipient of anatomical material in the eastern district (1919 Wis. Laws 272). This change represents the only significant adjustment to Wisconsin's Anatomy Act between 1903 and 1923.

One additional event contemporaneous with the consolidation of the medical colleges should be noted. On November 12, 1912, Supervisor H.F. Hoffman introduced a motion at the annual meeting of the Board of Supervisors pertaining to "allegations that certain graves in the cemetery of the Milwaukee County Poor Farm have been opened and the bodies there contained handled in an improper manner," (*Proceedings of the Board of Supervisors* 1912:273). Anthony (2016) provides substantial detail about the initial allegations of impropriety and subsequent investigation. Less than two weeks later, the investigating committee summarized their findings in a report to the board. The committee found the following: 1) that decaying coffins had been dug up and put into a pile; 2) a few bones in one of the coffins had been collected; 3) it was not the intention of the grave-diggers to burn bones, only decayed coffins; 4) at one time a skull had been placed on a fence post by person(s) unknown, it was unknown whether skulls had been rolled upon the lawn, and skulls and bones had not been used for bowling purposes; 5) the Board of Trustees of the Milwaukee County Poor could not be held to blame for the previous four

items, 6) Ferdinand Bark, Superintendent of the County Almshouse "failed and neglected to report" the finding of bones to the trustees, and 7) that the present cemetery should be enlarged or a crematory should be "erected for the disposal of the bodies henceforth to be sent to such cemetery," (*Proceedings of the Board of Supervisors* 1912:357). The seventh finding provides two pieces of provocative evidence when we consider behavior and the use of space at the cemetery: that the cemetery was running out of space for interments in 1912 and in 1912, a crematory did not yet exist on the county grounds.

"Corpse/It" (1923)

Laqueur describes the work of the dead as the "relationship between the overwhelming materiality of the dead one the one hand and Death and Culture on the other," (Laqueur 2015:x). The final change to Wisconsin's Anatomy Act occurred during a period of increasingly secular relationships with the dead, as lawn park and memorial park cemeteries offered new alternatives for interment for those who could afford private burial. These cemeteries functioned as modern businesses that superficially removed many overt references to death from the landscape, isolating and distancing mortality through reduced materiality (Sloane 1991). In one sense, Chapter 448 follows a similar trajectory, as this largely rewritten and reorganized version of the law incorporates important textual differences. The most material component of the law, "the body of the deceased person" became "the corpse" and "the body" became "it" (1923 Wis. Laws 448). A further reduction was made to the categories of persons eligible to claim a body with the elimination of "kindred" as claimants (1923 Wis. Laws 448). Now, only relatives were allowed to claim a body. Previously, some ambiguity existed in the amount of time initially available to claim a body, as both "within forty-eight hours" and a "reasonable time after notice" appeared in Section 1. The 1923 changes clarified this language, eliminating a "reasonable time after notice".

Other descriptive phrases, including "for preservation" (from embalming) and "for anatomical purposes" (from dismembered) were struck, and clarifications were made to the respective duties of the demonstrator of anatomy at the University of Wisconsin and public officers. Lastly, changes were made to the final section that addresses penalty. Aggrieved parties included person, university, or medical school, and fines now appeared to be automatic, as the requirement "to be recovered in action" was eliminated (1923 Wis. Laws 448). The summary of all legislative changes, including acts pertaining to the renumbering of state statutes, appears in Table 2.3.

Table 2.3. Wisconsin Dissection Law, 1925 (Wis. Stat. § 155.02-04 (1925)).

155.02 Distribution	1923 Chapter 448, Section 95 1921 Statutes 1437-1437a 1919 Chapter 272 1907 Chapter 118 1906 Supplement, Sections 1437-1437a 1903 Chapter 406, Sections 1-2 1898 Statutes 1437 1895 Chapter 117 1889 Annotated Statutes 1437 1878 Revised Statutes 1437 1868 Chapter 53, Section 1-3
155.03 Restrictions	1923 Chapter 448, Section 95 1921 Statutes 1437b-1437c 1911 Chapter 663, Section 195 1907 Chapter 118 1906 Supplement, Section 1437b-1437c 1903 Chapter 406, Section 3-4
155.04 Penalty	1923 Chapter 448, Section 95 1921 Statutes 1437d 1911 Chapter 663, Section 196 1907 Chapter 118 1906 Supplement, Section 1437d 1903 Chapter 406, Section 5

A 1929 bulletin published by the National Research Council produced a comprehensive survey of state laws relating to dead human bodies. At the time of publication, anatomical acts had been

adopted by all states except: Arizona, Delaware, Florida, Idaho, Louisiana, Maryland, New Mexico, Nevada, and Rhode Island (Weinmann 1929:63). There is some variation in the liberality of these laws, with some state laws providing 30 days, 60 days, or an indefinite period of time to reclaim a body, or in which bodies may be claimed, but where disposition is specifically mentioned, decent burial or proper cremation is nearly universal (Weinmann 1929:64-82). Wisconsin's neighbor, Illinois, goes so far as to provide a minimum penalty of fifty dollars or six months in county jail for failing to do so (Weinmann 1929:69). In Weinmann's view, the various state statutes go far in "their efforts to protect the rights of persons who might be entitled to the custody of such bodies," (1929:26).

Archaeological Evidence

Development and legislation have brought archaeologists into the planning and construction stages of projects, and the subsequent osteological analyses have provided a powerful body of evidence to complement, corroborate, and challenge historical information. Archaeologists are conversant with the state and Federal laws that provide proscriptions for where, how, why, or if contemporary excavation occurs. However, the relationship between the law and how sites form and change is equally worthy of attention, particularly in historic cemetery contexts, where rules and regulations are generally well documented. In other words, law informs not only the act of excavation, but will also inform what we find when we do.

A direct comparison of proscribed legislative actions with archaeological ground truth is contingent on a variety of factors, including time elapsed, disturbance, and available documentation, with some implementations or deviations more easily identified than others. Recall the essentials called for in Rule 17: a painted and numbered headboard, a grave no less than six feet deep, all necessary permits, and a paper record of the burial specifying the name,

cause of death, date of death, and the number of the deceased's grave (Richards et al. 2017).

With respect to painted and numbered headboards, only 4 burial tags have been recovered for the 2,256 burials excavated in Cemetery II (47BMI0076). The 2013 excavations yielded evidence of marker posts for only 14 burials (Richards et al. 2016:66). Historical documentation, specifically photographs, suggest that all surface evidence of the cemetery's existence was removed between 1925 and 1932. Given our knowledge that visible signs of the cemetery's existence were removed nearly 70 years prior to excavation, this is hardly surprising.

The original minimum depth of graves was equally difficult to discern, given various fill episodes related to landscaping and construction. Profiles of the cemetery indicated a minimum fill depth of 2 meters (6.5 feet) (Richards 1997). Coffin hardware, soil stains, and/or extant wood provided evidence that all interments occurred in coffins (Richards 1997:141).

With respect to required documentation, including the paper record of burials and necessary permits, the *Register of Burial at Milwaukee County Poor Farm* and death certificates are extant. However, archaeological investigations have demonstrated that the *Register of Burial* is incomplete, as it does not record all individuals interred within the cemetery, particularly in instances of coffins that contained more than one individual, nor does it record potential episodes of misburial (generally, a mismatch between the individual in the ground and the name associated with the grave number assignment in the *Register*) or grave robbing (Richards et al. 2016; Richards et al. 2017). Grave robbing episodes and misburial are attested to in several newspaper reports, particularly those related to the Judson investigation. During the investigation, the Sexton at Calvary Cemetery testified that Judson interred the remains of an unknown, mangled (dissected) woman where the remains of one Albert Schnettner should have been (MS, 4 February 1894:8). The body of the dissected woman, subsequently identified as

Maria Lammens, was eventually interred in Cemetery II (47BMI0076) (*Register of Burial at Milwaukee County Poor Farm* 1882-1974:14). It is unclear from the following newspaper reports whether Schnettner's body was ever located, as it was still missing two weeks after the Sexton's testimony (MS, 17 February 1894:3). Additionally, Superintendent Wetenkamp's statement that Judson frequently failed to inter bodies within 48 hours as required suggests that there may be further discrepancies between *Register of Burial* and actual burial locations (MJ, 2 February 1894:3).

The laws and statutes that comprise the Wisconsin Anatomy Act through time made the aftermath of legalized dissection and anatomization an explicit and legislatively defined event. In addition, the 1991-2 and 2013 excavations provide clear evidence for dissection and deviation from legislative proscriptions for burial outlined in state statute and county rule.

This discussion will necessarily be incomplete because a full osteological analysis has yet to be completed for the 1991-2 excavations, though larger-scale patterns and hypotheses are applicable to both excavations. For the 1991-2 excavations, a substantial quantity of information may be gleaned from field paperwork, excavation photos, and the Great Lakes Archaeological Research Center Report of Investigations 333 (Richards and Kastell 1993). A full bioarchaeological analysis was completed for the 2013 excavation, and field paperwork, excavation photos, and the University of Wisconsin-Milwaukee Cultural Resource Management Report of Investigations 381 provide comparable sources of information for this excavation (Richards et al. 2016).

Excavation methods for the 2013 excavation resulted in the following recovery contexts when "more than one individual or more than more than one set of non-individualized human remains were present in a single coffin," (Richards et al. 2017:242):

> "(1) a single individual in a single coffin assigned a unique lot number regardless of the completeness of the individual;
> (2) a 'mixed' context where at least one individual was more than 50% complete but where other remains could be individualized and assigned multiple lot numbers; and
> (3) a 'commingled' context, where individuality was unclear and a single lot number was assigned to all remains regardless of the minimum number of individuals represented," (Richards et al. 2017:60,242).

The laboratory methods outlined in the 1991-2 report made provision for the recovery of more than a single, primary individual as well. "Secondary burials are defined as skeletal elements of one or more individuals placed inside the coffin or recovered from outside the coffin in the burial pit," (Richards and Kastell 1993:55). If a secondary burial was recognized at the time of excavation, it was assigned a separate lot number from that assigned to the primary burial. While some variance exists in recovery contexts between the two cemetery areas, the same three types of contexts were identified during the 1991-1992 excavations.

The burial of an incomplete person was putatively legal, as decent burial was required for only "the remains of such body not so used" after 1903 (1903 Wis. Laws 406). Without the full osteological analysis of the 1991-2 excavation, it cannot be stated with certainty that any violation of law occurred, though as this work is completed and our understanding of the spatial and temporal organization of Cemetery II (47BMI0076) evolves, it is possible that interments of incomplete individuals that exhibit evidence of dissection will be identified among areas of the cemetery that pre-date 1903. However, a challenge does arise with quantity: though Rule 17 does not explicitly state "one person, one coffin" this ratio is implied by the requirement for a numbered headboard corresponding to an individual interment and an individual entry in the burial registry. Thus, interment of more than one individual in a coffin would certainly violate not only the common law spirit of decent burial, but the legal proscriptions as well. That being said, there are exceptions explicitly listed in the *Register of Burial*. As outlined in Table 2.4, the

majority of listed multiple interments represent two infants. The remaining cases vary, including a mother and a child (1921) and collected bones from "other graves" (1909). There are a number of plausible explanations for why these discrepancies were noted when other instances of multiple interments involving two or more adults were not. From the perspective of burial positioning, it is possible to fit two stillborn infants side-by-side in a supine position within a coffin. The same is not possible for adult remains, and the various positions of adult remains observed in multiple interment contexts would have been an explicit violation of contemporary social norms for burial. Related to this, the level of social autonomy associated with adults may not have been conferred on infants that had yet to become full members of society. Lastly, it is possible that these notations reflected the attitude of an individual recorder. Discrepancies may have been noted precisely because there was a reason to note them. These cases of multiple interments may have been perceived as "more decent", simultaneously providing comfort for the living and the dead.

Table 2.4. Cases of recorded multiple interments from the *Register of Burial at Milwaukee County Poor Farm* (1882-1925). Name entries are replicated as they appear in the *Register*.

Year of Death Certificate	Grave Number	Individuals interred	*Register* Page
1883	D3	Son of Chas Stastny Son of Chas Stastny	3
1884	D12	Twin sons of Aderman Groth	3
1894	G89	Arthur + Clara Sankohl	13
1900	V8	Jos. Haxney Infant Thomas	31
1900	V35	Two unknown male foetus	31
1900	V43	Two unknown female foetus	31
1903	Z7	Unknown male child Unknown male child	39
1903	Z28	Two female foetuses	39
1907	E62	Female foetus Female foetus	56
1909	L22	Bones from other graves	66

Year of Death Certificate	Grave Number	Individuals interred	*Register* Page
1916	W15	Child of E. Haussan	90
1921	68-61	Child of E. Haussan Mary Paul Jones Edward John Jones	109

In the 2013 excavation, there were 625 mapped coffin locations that contained human remains (Richards 2016:61). Of these, there were:

- 57 adult-sized coffins containing the remains of more than one individual (adults);
- 7 adult-sized coffins containing the remains of more than one individual (adult and juvenile);
- 9 juvenile-sized coffins containing the remains of more than one individual (juveniles);
- 1 juvenile-sized coffin containing the remains of more than one individual (adult and juvenile),

thus, of the coffin locations that contained human remains, 74 coffins (11.8%) contained the remains of more than one individual (Richards et al. 2016:61-62). Five of the 44 coffin locations with human remains from the 1991-92 excavation selected for strontium sampling contained the remains of more than one individual (11.3% of the sample derived from 1991-2). Interment of more than one individual in a coffin was by no means an isolated occurrence, but rather a consistent pattern of behavior, calling into question the moral and legal conception of a "decent burial".

Two patterns on a spectrum of behavior have been identified with regard to mixed and commingled burials. While these patterns may have a temporal component, this cannot be demonstrated conclusively at this time. The more complex mixed and commingled burials are frequently accompanied by material culture putatively associated with the medical colleges, such as broken laboratory glassware, rubber tubing, bandages, prescription bottles, and an abundance of material that seems to defy logical classification, including peanut shells, a garden rake head, and a tire iron. Other mixed burials are less complex, containing two or three individuals. In

most cases, the human remains in commingled contexts display evidence of dissection. Moreover, the presence of atypical material culture within a burial is not limited to mixed and commingled burials. Scissors and a mustard jar represent some of the unexpected objects recovered from single adult interments with evidence for post-mortem investigation. There appears to be no distinction between the treatment of the remains and the "other" objects in the coffin, and many, if not most, of these burials do not seem to comply with contemporary mandates for "decent" interment.

The Law Regarding Human Remains and the MCPFC

If we compare Wisconsin's proscriptions and practice to Marsh's seven fundamental principles of the law of human remains, the following picture emerges:

1. "The courts of equity have jurisdiction over human remains, particularly after burial," (Marsh 2015a:4).

Equity jurisdiction supplements common law. The events preceding the 2013 Milwaukee County Poor Farm Cemetery excavation provide an example. Judge Rachel L. Ping issued a decision (April 18, 2013) on behalf of the Wisconsin Division of Hearings and Appeals, concluding "that the benefits to permit applicant Froedtert in disturbing the catalogued burial site outweighed the benefits to all other persons shown to have an interest in not disturbing the burial site," (Richards et al. 2016:6). Thus, a permit to disturb the burial site was granted.

2. "The preferences and religious beliefs of the decedent shall be honored," (Marsh 2015a:4).

This speaks to two rights of the dead. The first, the right to a decent burial, is reflected in state statutes requiring decent burial of the indigent, convicts, and the dissected remains of unclaimed individuals as well as in Milwaukee County's Rule 17. The second, the right to

determine the place and manner of disposition, is alluded to in the Anatomy Act through the "last sickness" provision.

3. "The rights of the next of kin to control the disposition of the dead shall be respected, but they are not absolute," (Marsh 2015a:4).

Those who could afford burial elsewhere frequently pursued options other than a potter's field interment (*see* " Not in Judson's Favor: Bodies Buried in the Potter's Field That Do Not Belong There, Friends Having Paid for Respectable Burial in a Cemetery", MS, 03 February 1894:5). However, if a body entered the legally regulated cycle of anatomization, the rights of the next of kin were increasingly constrained by time and available means. If relatives (or in earlier iterations of the law, friends or kin) failed to receive notification or were unable to claim a body within 48 hours, they were forced to negotiate their rights in a second, more challenging phase. Here, relatives had to assert that their quasi-property interest was greater than a medical college's through satisfactory proof of relationship. However, if this could not be accomplished within 12 days or if claimants were unable to reimburse embalming related expenses, the rights of the next of kin would not be absolute, but would be supplanted in the hierarchy of control by medical colleges.

4. "Individualized human remains are more worthy of protection than de-individualized remains," (Marsh 2015a:4).

Not all human remains are equal in the eyes of the law. The recently intact dead tend to be awarded more "rights" than unclaimed, unidentified, de-individualized, or cremated remains (Marsh 2015b:10). "In other words, the closer the remains resemble a living human… the more likely the remains will be respected and protected," (Marsh 2015b:10). Two examples from the Milwaukee County Poor Farm Cemetery story make this abundantly clear. First, in explaining

why he didn't feel it was "worthwhile to return anatomized bodies for burial" (Richards et al. 2017:252), a Dr. Burgess stated, "besides you couldn't identify the bodies if you wanted to, they are so mutilated and disfigured…you couldn't identify your grandmother if she were in that party. After those bodies have been pickled and cut up and operated on by a class of students, you can't tell one from another," (MJ, 5 February 1894:1). Second, the 1993 disinterment permit, issued after construction had already disturbed graves, provides permission to remove the recently "discovered" remains of the deindividualized "John and Jane Doe, et al [*sic*]" (Richards and Kastell 1993:23).

5. "An individualized decedent shall be committed to a single, memorialized grave in perpetuity," (Marsh 2015a:4).

While Milwaukee County's Rule 17 called for one person, one coffin, and one grave with an individualized marker, there is archaeological evidence for the interment of multiple individuals or parts of individuals or a combination thereof. Perpetuity is not a concept associated with Cemetery II (47BMI0076), as contemporary newspaper reports were chary of the longevity of markers (likely to be plowed over) and historical documentation, specifically photographs, suggest that all of the surface evidence of the cemetery's existence was removed between 1925 and 1932 (Richards and Kastell 1993). Disturbances to Areas I and II may have begun as early as 1925 (Richards and Kastell 1993:64). Further, a 1932 *Milwaukee Journal* article regarding the construction of the Nurses' Residence describes disturbed coffins being loaded into trucks (Richards et al. 2016:78). "The debris was hauled a few hundred feet west of the nurses home site, spread near the hospital for the chronic insane and crushed into the ground as the basis for a proposed landscape project," (*Milwaukee Journal* [MJ], 6 April 1932).

6. "The interests of the dead shall not trump the needs of the living," (Marsh 2015a:4).

This is the logic that informed Smith's "Use of the Dead to the Living" and the passage of Anatomy Act legislation. The need for properly educated, trained medical professionals outweighed the objections of the poor, those most at risk of anatomization and disturbed interments. Though U.S. law suggests that graves "shall remain inviolate", this principle is challenged by a "strong utilitarian countercurrent" (Marsh 2015b:11). As Marsh states, "this has justified massive movements of graves as cities expanded," (2015b:11) and the Milwaukee County Poor Farm Cemetery is no exception.

7. "Human remains are not property, and the interests of the next of kin may not be enforced through property law," (Marsh 2015a:4).

Strictly speaking, this principle is accurate. However, the positive legal presence of the corpse has failed to prevent commercial use, and there has been ample legal activity to substantiate the existence of a quasi-property interest during the period between death and disposition on the part of the next-of-kin. Damages for taking unauthorized control of a corpse or for interference (including unauthorized mutilation) have "been held to give rise to a cause of action in tort," (Marsh 2015b:15). Amendments to Wisconsin's Anatomy Act designated specific parties (medical colleges, the University of Wisconsin) as holding a quasi-property interest in unclaimed corpses that was enforceable through financial penalty.

The experience of Milwaukee's socially marginalized in death lies squarely at the intersection of two "public humanities": social contract and legal construct. The relative width of the gap between them all depends on which coffin you're in.

Chapter 3: Materiality

> "…objects are important not because they are evident and physically constrain or enable, but often precisely because we do not 'see' them. The less we are aware of them, the more powerfully they can determine our expectations by setting the scene and ensuring normative behavior, without being open to challenge," (Miller 2005:5).

Richards describes the information recovered from the Milwaukee County Poor Farm Cemetery as consisting of five major components: material culture, written documents, routinized symbolic behavior as expressed through mortuary ritual conducted at the cemetery, interpretation of the mortuary site itself, including organization, patterning, and history, and the biological aspect- the individuals themselves (1997:13). The boundaries between these components are fluid, and materiality studies offer a valuable theoretical perspective that both engages with the multiple relationships (entanglements) within a cemetery context that is simultaneously institutionalized and actor driven and offers sufficient latitude to explore multi-scalar and multi-temporal patterns of tension and indeterminacy (Moore 2000).

Materiality explores the relationship between concepts and physical manifestation, or things. The key theoretical premise of materiality rests on the idea that humans encode, create, invest, and reveal things with significance; essentially things as artifacts (Hodder 2012; Miller 2005). A second theorization of materiality with particular importance to this project attempts to transcend a dualism between subject and object, recognizing "the larger compass of materiality, the ephemeral, the imaginary, the biological, and the theoretical; all that which would have been external to the simple definition of an artifact," (Miller 2005:4). Within this project, the relationship between materiality and agency is extended to include theorizations of postmortem agency. The incorporation of ideas central to postmortem agency is a critical complement to discussions of materiality, especially in light of the materialization component of destructive

testing for strontium isotope analysis. Fundamentals of materiality relevant to this project are summarized and followed with their application to this research project.

Philosophers and Scholars

Miller states, "philosophy is therefore not (I hope) what anthropologists want to do; rather, it is our insurance policy against doing badly what we want to do," (2005: 44). The work of three philosophers, Hegel, Merleau-Ponty, and Heidegger provide the "insurance" for theorizations of materiality. Common to all three is a full embedding of humans and things in one another (Hegel 1977[1807]; Heidegger 1973; Merleau-Ponty 1962, 1963). Hegel's *Phenomenology of the Spirit* describes the process of objectification, wherein subject and object are defined through their relation to one another (1977[1807]). Hodder describes Hegel's objectification as the "process by which we make the world, and in so doing make ourselves. This is not a static opposition of subject and object but a flow of dialectical relations," (2012:31). Merleau- Ponty's *Phenomenology of Perception* relates our bodies to things through a relationship of dependency. Merleau-Ponty states, "each contact with a thing is held together by our own constancy," (1962:332). Essentially, as humans interact and handle objects, we in turn can understand our bodies- we make things and things make us (Hodder 2012). Heidegger continues in the phenomenological vein and maintains the focus on things: "that which is all and is something in some way or another is a thing," (1973). In this conception, humans are not separate from things and each is fully embedded in the other (Heidegger 1973; Hodder 2012). The world is already meaningful (the *dasein*, or "being-in-the-world") and thus the starting point is not subjects or objects, but the specific interrelationships between them that constitute each in a given historic culture (Heidegger 1973; Hodder 2012).

Four additional scholars are an integral part of the "academic lineage" of materiality: Bourdieu, Appadurai, Latour, and Gell. Bourdieu's *Outline of a Theory of Practice* demonstrates the capacity of objects to implicitly condition human actors (1977). Pedagogy is primarily performed through material culture. As humans, we learn through and are socialized by our engagement with material culture (things) (Miller 2005). Miller argues that Bourdieu's conception of *habitus* can provide a "theory of things" (2005:6). Appadurai, in *The Social Life of Things*, explores commodities, objects of economic value (1986). Value is not inherent, but encoded in objects by human actors (Appadurai 1986). Through his focus on the movement of commodities, Appadurai explores politics ("broadly constructed") as the link between value and exchange (1986). Within a conceptualization of social, active commodities of situational and potentially variable value, Appadurai provides a methodology for materiality: things in motion illuminate their human/social context (1986). Latour (1999a; 1999b) and Gell (1998), build on the idea that materials illuminate social context and thus provide a way to tease out agency. The relationship between materiality and agency is elaborated in the following section.

What is materiality?

Materiality is matter, a part of *habitus* (Bourdieu 1977), active material culture (Ingold 2007), a vital force (Coole and Frost 2010), embodiment (Scarre 2004), central to creating agents/expressing agency (Dobres and Robb 2000), and a quality of relationships (Miller 2005). Materiality has a plurality of forms and is how we understand ourselves as human (Miller 2005). In the archaeological realm, we methodologically "follow" artifacts (things) to yield analytical results (Robb 2004). Things in motion illuminate human and social contexts, providing the means to tease out agency, the sources and products of socially significant action (Appadurai 1986; DeMarrais et al. 2004; Robb 2004). As McLuhan argued, "the medium is the message,"

(1964:1). A theory of things is possible, but requires an acknowledgement that there will be ephemeral, biological aspects of a larger picture that may be missed. While philosophical conceptualization demonstrated the possibility of transcending a subject/object dualism, Miller reminds us "as anthropologists, we need to be aware of whose interests are served by making this claim," urging a return to "ethnographic empathy and ordinary language," (2005:15). Hodder correctly notes "there is much cultural diversity in the way in which humans view things," (Hodder 2012:34). The terms subject and object will be used in this discussion because they echo the legal struggle to define the dead and the institutional facts they symbolize.

Materiality and Power

There are several approaches to understanding power relations through a material lens. Scholars including Earle (2004), Clark (2004), Kristiansen (2004), Marx (1965[1846]), Miller (2005), Pauketat (2000), and Rowlands (2004; 2005) have explored the various intersections between material culture and power. As described by Miller, the "study of material culture often becomes an effective way to understand power…as the mode by which certain forms or people become realized, often at the expense of others," (2005:19). Further, encounters with materiality imply "two stances toward the nature of materiality itself: that of the people who created these forms, and that of our apprehension of these forms," (Miller 2005:15). Structural conditions have a strong material bias, and if we consider the dynamism inherent in Gidden's enstructuration wherein actions are informed by structure and also change it, it can be argued that the material conditions of structures are a component of power relationships, particularly when actions reproduce structures and form social relationships (1979). Power is a property of materiality, especially at the institutional level, and some institutions are more material than others (Miller 2005:20). Kristiansen argues that "although institutions are invisible, they often materialize in

specific and reoccurring ways," allowing us to infer the significance (both cultural and institutional) of the evidence (2004:179). The relationship between object and institution may be described as an institutional fact (Searle 1995; 1997). Objects are constitutive of the institutional facts they symbolize, where institutional facts are abstract concepts such as property or debt and "the realities by which society is governed" (Clark 2004; Renfrew 2008:98; Searle 1995). To comprehend how power is exercised materially, there needs to be an understanding of both the regulating institutional framework and the "symbolic grammar" of that framework (Kristiansen 2004:179).

Marx offers still another potential direction to explore the dynamic between materiality and power, in production. Marx's discussion of the proletariat in a capitalist society saw workers denied subjectivity through their assigned value as a mere force, labor (thing) (1965[1846]). Certainly the process of losing humanity through a denial of material being has relevance for the history of anatomization and dissection at the Milwaukee County Poor Farm Cemetery.

Materiality, Agency, and Postmortem agency

A fundamental premise of materiality is that agency is not exclusive to persons but can also be a feature of things (Miller 2005:11). Latour, in his argument against a distinction between science and society, refers to a practice of "purification" whereby scientific practice is devoid of messy, capricious, "human" qualities and humanity lacks any deterministic, unequivocally objective, mechanistic qualities (as instruments or machines are frequently apprehended) (1993; 1999a). Latour turns "purification" on its head in Actor Network Theory, where relationships exist between networks of *agents* (1993; 1999a). An example familiar to many in higher education is the online learning platform: the system crashes, a quiz is not submitted on time, and the "system" becomes the agent "behind what subsequently happens," (Miller 2005:11). As

described by Latour, "the prime mover of an action becomes a new, distributed, and nested set of practices whose sum may be possible to add up but only if we respect the mediating role of all the actions mobilized in the series," (1999b:181). Gell's theory of abduction sees social agency, inferred intentionality, when humans encounter an effect (1998; Miller 2005:13). Using art as an example, distributed agency has an anthropomorphizing effect, where "the creative products of a person or people become their 'distributed mind' which turns their agency into their effects, as influences upon the minds of others," (Miller 2005:13). In this sense, agency is embedded. Agency has numerous definitions across the field, but returning specifically to the context of materiality, Robb provides a succinct assessment, "humans attempt an agency of why; material things provide an agency of how," (2004:133).

One of the claims made on behalf of bioarchaeology as a sub-discipline is that agency is at the core of this type of research, especially in the tendency to highlight individuals and social actors (Crandall and Martin 2014:430; *see also* Agarwal and Glencross 2011). Agency is not a property that ceases with biological death (Robb 2013). Bioarchaeologists have embraced the agency of the dead (in addition to trying to "get at" patterns of agentful behavior in the archaeological record of the living). Each of the following ideas is central to the concept of postmortem agency, that is, "the ability of the dead… to engage, influence, confine, or structure the behavior of the living whether directly or indirectly," (Crandall and Martin 2014:431).

- Human bodies- bone and other tissues- incorporate "environmental factors, including biological, ecological, and social circumstances," (Zuckerman et al. 2014:515). Essentially, an individual's life history is embodied- becomes part of the body- in materials that are archaeologically recoverable (Crossland 2009). Bodies themselves are a source of information, but critically, are not merely "inert archives of information but are,

symbolically, participants in the research process whose values and interests must be recognized," (Zuckerman et al. 2014:517).

- Bodies interact with other social agents through their very material presence (Crandall and Harrod 2014; Tung 2014). The dead can also act collaboratively with others (Crandall and Martin 2014). In one sense, this is not unlike a motif that appears in several fairy tales (*The Seven Ravens*, *The Enchanted Pig*) wherein the body (in the tales, a pinky) becomes a key, a means of solving a problem. The relational ethics of this type of relationship are discussed in more detail in the following pages.
- Bodies (parts or in their sum) can transcend dichotomies like subject/object or dead/alive by taking on new forms and identities, like symbol, spirit, relic, or sample (Crandall and Martin 2014:431). Bodies occupy multiple "categories" at once, and this plurality of significance is quickly apparent when viewed through a material lens (Meskell 2004).

In a discussion of what form postmortem agency might take, Robb provides a few key examples, with the dead as "initiators of a chain of action", "as memory", and "as political catalysts," (2013:447). While it may be relatively straightforward to identify potential forms of action, identifying how those actions are undertaken is less so. The discussion of postmortem agency within bioarchaeology generally follows two complementary trajectories. The first follows a Bourdieusian approach, viewing agency as "the ability of subjects to resist existing social structures and act outside of them," (Crandall and Martin 2014:431). The second trajectory is informed by theorizations of agency proposed by Gell (1998) and Robb (2004) that frequently appear in materiality studies. Here, agency is divided into two tiers: the primary/conscious agency of actors "who can act on their own," and the secondary/effective agency of actors (or objects) "who only serve to extend the agency of other actors," (Crandall and Martin 2014:432).

Consensus on whether dead bodies have inherent primary agency is unlikely; as Crandall and Martin aptly note, "that is dependent on one's perspective," (2014:433).

The practice of bioarchaeology, the "interpretation of skeletal material," from archaeological contests and the activities of bioarchaeologists themselves, is "one of the means by which the dead acquire post-mortem agency," (Arnold 2014:524). Because bioarchaeology "serves as a primary reanimation nexus" (Arnold 2014:524) within Western academic settings, several scholars have discussed and problematized the role of ethical practice within bioarchaeological research (DeWitte 2015; Larsen and Walker 2012; Turner 2012; Walker 2000; Wylie 2015). Zuckerman et al. (2014) chart a course for relational ethics in bioarchaeological research, building connections between the past and the present by conducting research that "realistically impact people, particularly oppressed communities, today," (Crandall and Martin 2014:433). Informed by "theoretical work on embodiment," Zuckerman et al. assert that, "…highly contextualized skeletal data analyzed in a relational, contingent interpretive space can generate otherwise inaccessible, direct information about the constitutive, productive effects of processes like power and oppression on human bodies," (2014:513). Importantly, this process enables recovery of agency (Zuckerman et al. 2014) and is potentially an avenue for the collaborative action that is part of the agency of the dead. However, as Sappol (2017) notes, bioarchaeologists live with a paradox. The work of bioarchaeology is not so dissimilar to the work of anatomists and others within the scope of consent and materialization. The key is the directionality of that materialization (or objectification): on one side is the negation or denial of personhood, through "obtuseness and indifference, sometimes by deliberate action," (Sappol 2017:xi). On the other is the recovery and recognition of personhood, through a project of

"…unearthing, documenting, and narrating," (Sappol 2017:xi). Sappol refers to these types of projects as "moral tales for our time" (2017:xi) and critically, ongoing conversations.

The Milwaukee County Poor Farm Cemetery

There is a quotation from Matthew that has particular relevance to the Milwaukee County Poor Farm Cemetery Project: "the poor you will always have with you…" (New International Version 26:11). From 1882 through 1925, the poor, the institutionalized, unclaimed, and anatomized of Milwaukee County were interred in Cemetery II (47BMI0076). The absence/presence of the poor- and the cemetery burial population generally- mirrors their assigned status as objects and subjects, things or people. The theoretical framework of materiality provides a uniquely suited intellectual structure for this project. Materiality provides a theorization of things as artifacts, wherein these "things" may be seen as the sources and products of socially significant action (Miller 2005). Human social context and agentful action contribute to a process of materialization, wherein a transformation of ideas, stories, and values results in a physical reality (DeMarrais et al. 2004; Dobres and Robb 2000; Kristiansen 2004).

In dying (in the sense of the social act described by Robb (2013)), the poor and others' bodies became the responsibility of another body, the body politic. Thus "the poor" were with Milwaukee County until they weren't: county rules made no guarantee of perpetual care, nor of public acknowledgement beyond a painted and numbered headboard. Excavation paperwork for Burial Lot 3075 contains a comment that, while written in reference to a burial in an area of previous construction disturbance, resonates beyond its intended context: "Bones gone! Or were never there!" In the period of deliberate forgetting and erasure following the final interment in Cemetery II (47BMI0076) that continued until 1991, it wasn't that the poor weren't with the body politic- they weren't ever there. Williams' work on memory/forgetting has particular

relevance here. Per Williams, the "location, form, and contents of the grave can be interpreted in terms of strategies for remembering or forgetting the dead," (2003:18).

In this case, all three- the location, form, and contents of graves- became part of a material strategy of forgetting Cemetery II (47BMI0076), the people interred there, and the events preceding the interments within it- particularly losses of personhood and anatomization. Per Richards et al., "…none of the cemeteries were mapped on the series of dated maps of the Milwaukee County Grounds with one exception," (2017:72). This map is the undated, Works Progress Administration era map discussed in Chapter 1. That Cemetery II (47BMI0076), a mere six miles west from Milwaukee's historic City Hall, appears on only one known map affirms Williams' (2006) arguments about selective remembering.

The contrast between Dr. W. H. Earles' grave at Forest Home Cemetery and the interments at Cemetery II (47BMI0076), as illustrated in Figure 3.1, is striking. Beyond a simple comparison of those with resources and those without, these images illustrate the gulf between "decent" burial and "decent and respectable" burial. Dr. W. H. Earles, one of the founders and dean of the Milwaukee Medical College, was among those with the power to materialize- both the bodies of the dead into anatomized "objects" and his memory. An epitaph visible to this day memorializes "a careful diagnostician a brilliant surgeon/ whose skill was only equaled/ by his kindness of heart". The poor, by contrast, were "hidden away" in plain sight, as a very material symbol of inequality. The graves of those interred in Cemetery II (47BMI0076) were not marked with names or epitaphs- only a number, a letter, or some combination therein. Only four of these markers (out of the thousands that existed) have been recovered.

Figure 3.1. Left: Dr. W. H. Earles' grave at Forest Home Cemetery. Photo by author. Right: Cemetery II (47BMI0076) in 1992, with arrow illustrating area of intact burials that were excavated in 2013. Source: Richards et al. 2016:18. Reproduced with permission.

Socially progressive values in the late nineteenth and early twentieth centuries found physical manifestation in the form of the Milwaukee County Poor Farm Cemetery. As Miller argued, objects have power to influence our expectations, particularly when we aren't necessarily aware of them (2005:5). Externally, thousands of relatively identical coffins attested to the aspirations of Milwaukee County's Rule 17. Internally, "decent burial" had distinctly physical reality too, whereby some individuals became anatomized human remains, losing parts or the whole of their "individuality" by osteological standards, while others were interred with trash, positioned contrary to Christian eschatological standards, or were granted "little earth for charity", sharing their interments with 2, 3, 4, or more individuals (Richards 1997; Richards et al. 2016).

The dialogue between people and things (and people who became "things") is represented at multiple levels: within the coffin, within the cemetery, and within nested structures of power (Miller 2005). These materials- both person and otherwise- serve as referents of institutional facts (Clark 2004; Kristiansen 2004; Meskell 2004; Searle 1997). For all the sheer density of material created by legislative enactment or through the exercise of power- books of statutes, acts, rule books, the *Proceedings of the Milwaukee County Board of Supervisors*, notes

from investigative committees- it is somewhat astonishing that enacting decent burial appears to have been so dependent on individual decisions. However, as Moore aptly states, "the pressure toward establishing and maintaining order and regularity, and the underlying circumstance [of] counter-activities, discontinuities, variety and complexity make social life," and in this case, death, "inherently unsuited to social ordering," (2000:39). Institutional facts were in place to ensure a "decent" burial for the indigent and unclaimed in Milwaukee, but the archaeological record challenges this ideal through Category B burials.

Through the concept of "things" as defined by Robb, we can seek out the extended artifacts that represent social life (Robb 2004). The archaeological record of the Milwaukee County Poor Farm Cemetery is tremendously complex, not only in what was recovered, but especially in what wasn't: previously disturbed interments, missing heads, limbs, sections of bone, and the persons who had "anatomical purposes" listed as their place of burial. The evidence, when viewed through a material lens, illuminates the "counter-activities, discontinuities, variety and complexity" of lives and death (Moore 2000:39). It hardly seems coincidental that the dead body has both an ambiguous legal status and that interments reflect a spectrum of disposal to burial. After all, the dead don't bury themselves (Parker Pearson 2003:3). In this case, exploring an opposition between subjects and objects may be useful precisely because the law sets up an opposition between person (rights) and property.

The form and contents of graves- externally, thousands of relatively identical coffins, while internally, an entirely different and substantially more complex narrative- obscured the stories and experiences of the Rosche children, Bruno Barkovich, Adolf Wildiner, Joseph Bogdanis, Paul Kohler, Maria Lammens, and thousands more. Today, the materiality and the physical presence of thousands of bodies, boxes of grave goods and coffin hardware, paper and

digital files, theses, dissertations, reports, and books is part of a process of memory building, where "the poor" are once again "with us" (Arnold 2014:527; Williams 2003:10).

The individuals once interred in Cemetery II (47BMI0076) engage us, motivate us, and influence what we know as archaeologists. The burial population- the people- once interred at the Milwaukee County Poor Farm Cemetery are what has been referred to in the literature as the exceptional dead, "bodies that 'speak' to the living, act through them, and around them," (Crandall and Martin 2014:432). These individuals are exceptional dead not only because of their numbers (a collective power in and of itself), but because their interactions with the living, including archaeologists, likely result in "much more effective political agency in death than at any point in their lives," (Robb 2013:448). They motivate the questions that challenge extant historical narratives. The corrective balancing of the historical record (i.e. fulfillment of social contracts, Wisconsin's Anatomy Act in practice) gets back to the importance of historical archaeology. Certainly, the Milwaukee County Poor Farm Cemetery individuals influence which research programs to pursue, particularly in weighing the costs and benefits of destructive analysis.

The ongoing accumulation of knowledge and meaning through the intersectionality of people and things presents a larger picture of an entangled reality (Hodder 2012). Here, historical choices inform our present ones, including a choice to materialize these human remains in yet another way- through destructive isotopic analysis. The production of direct information, in this case, strontium isotope signatures, offers information on individuals' natal regions that is otherwise inaccessible, particularly for those whose interments were not recorded in the *Register*. Additionally, the production of signatures from first and third permanent molars allows the generation of a partial subject biography, focused on birth through approximately 15 years of

age. Bodies tell stories of change, of movement, and of inequality. They tell us who became anatomized and who was interred in the potter's field. These stories were obscured or untold in the historical record through the selective forgetting that perpetuated marginalization. The discussion of this geochemical data, when highly contextualized with skeletal, archaeological, and documentary data provides sufficient evidentiary support to substantively discuss the effects of structural inequality and power on human bodies. The explicit analytical goal of recovering individuals' roles within power structures in the past and recovering subjectivity is both a goal of the bioarchaeological program outlined by Zuckerman et al. (2014) and this research project. Bioarchaeological approaches provide an avenue for research to reverse the anatomization or "thingness" of individuals interred at the Milwaukee County Poor Farm Cemetery. This research process may help overcome another, more difficult theorization of materiality- transcending the dualism between object and subject- by using a specific archaeological research technique to recover subjectivity in the present from the "objects" of the past (Miller 2005). This research, in contrast to the materialization of the past, attempts to transform individuals from passive recipients of exploitive policies to active subjects and epistemological partners, with the hope that the knowledge gained will contribute to the restoration of personhood and identity for the exceptional dead once buried in the Milwaukee County Poor Farm Cemetery.

Chapter 4: Materials and Methods

Strontium Isotope Analysis

Strontium isotope analysis is geochemical method that is applied to human skeletal tissue, with wider applicability in a variety of disciplines for provenance and mobility studies (Bentley 2006; Crowley et al. 2015; Widga et al. 2017). The ability to trace population movement is dependent on four basic premises: first, isotopes vary geographically, second, local geographic regions may be defined, third, these localized geological signatures have remained constant for several millennia, and lastly, human dental enamel reflects bioavailable $^{87}Sr/^{86}Sr$ (Bowen and West 2008; Burton and Hahn 2016:113; Price and Burton 2011:94). Ericson (1985) is credited with a seminal paper outlining the utility of strontium isotopes for the assessment of human mobility (Burton and Hahn 2016).

Improvements in radiogenic (skeletal) strontium isotope analysis have led to its increased applicability for the study of population movement and natal region identification (Bentley 2006; Hedman et al. 2009; Killgrove and Montgomery 2016; Price et al. 2002). While bioavailable $^{87}Sr/^{86}Sr$ ranges can be extremely specific for a given geographical locale, strontium isotope signatures should not intellectually be construed as having the ability to provide a "post-code" of residence (Pollard 2011; Bentley 2012:9328). Rather, the use of radiogenic strontium isotope analysis is most useful when differentiating between local and non-local populations, especially in prehistoric populations (Hedman et al. 2009; Slater et al. 2014). Burton and Hahn argue that the "$^{87}Sr/^{86}Sr$ variation in humans from a single location is nonetheless demonstrably extremely low, on the order of ±0.0003," (2016:118; Price and Burton 2013).

As a part of a larger suite of possible bone chemistry analyses including stable dietary isotope analyses, these analytical methods represent a vibrant category of archaeological research

(Arnold et al. 2016; Coutu et al. 2016; Killgrove 2013; Pye 2004; Schurr 1998). Isotopic analyses can make vital contributions to our understanding of the past, particularly in historic cemetery contexts. Specifically, strontium isotope analyses, when used in conjunction with other lines of evidence, can contribute to our knowledge of demographic trends, provide temporal refinements for a given cemetery, contribute to identifications of individuals, and create links with forensics. The utility of $^{87}Sr/^{86}Sr$ analysis in historic contexts has been established through several high-profile studies, including: the identification of Richard III (Urquhart 2014), isotopic determinations of region of origin for U.S. war-dead from the Vietnam Conflict (Regan 2006), a strontium isotope reconstruction of the composition of an urban free black population from the Newburgh Colored Burial Ground (Nystrom et al. 2011), and stable isotope indicators of demographics in 18th and 19th century North Americans (France et al. 2014). In Europe, strontium isotope research in historic contexts has been conducted in a variety of regions, including: Austria (Gangl 2013), Denmark (Frei and Frei 2011; Price et al. 2012; Rasmussen et al. 2017), Germany (Grumbkow et al. 2013), Great Britain (Evans et al. 2006; Montgomery et al. 2003), Poland (Gregoricka et al. 2014), and Spain (Ortega et al. 2010).

With regard to this research project, historical documentation, including immigration papers and burial ledgers, can contextualize $^{87}Sr/^{86}Sr$ results as one component of the multiple lines of evidence that can contribute to our knowledge of demographic trends, provide temporal refinements for a given cemetery, and contribute to the identification of individuals (Crist 1995; France et al. 2014; Nystrom et al. 2011).

There are four naturally occurring isotopes of strontium and our attention focuses specifically on the single radiogenic isotope, ^{87}Sr. The abundance of radiogenic ^{87}Sr is expressed as a ratio relative to the abundance of non-radiogenic ^{86}Sr (Pye 2004:220). Two factors influence

the variations in relative abundances of strontium in different reservoir contexts on the earth; the initial relative abundance at the time of formation, and time, the passage of which leads to a progressive increase in the abundance of radiogenic strontium isotopes (Pye 2004:218). Additional changes in relative strontium isotope ratios occur when primary rock materials are weathered as sediments, that, once formed, act as a distinct medium in which further radioactive decay takes place (Pye 2004:218).

In the course of an animal's regular biological activity (eating and drinking), the local "isotope composition of the water, plants, and animals consumed" is captured in its "skeletal tissues when strontium substitutes for calcium" during normal element mineralization (Slater et al. 2014:118). Pye describes $^{87}Sr/^{86}Sr$ as an "ideal tracer for where an organism lived and derived the bulk of its diet" (2004:218) as there is minimal metabolic fractionation, or change in relative abundance, as a result of an animal's body size, metabolic processes, or diet (Slater et al. 2014:118).

Though strontium isotopes vary with types of bedrock and sediment, geology alone is not sufficient to distinguish one $^{87}Sr/^{86}Sr$ signature from another. What actually helps provide the definition for a given natal region match is the bioavailable $^{87}Sr/^{86}Sr$ range, the amount of strontium in a given area available for biological uptake (Burton and Price 2013; Price et al. 2004). Skeletal tissues from humans and other fauna that have the same diet and procurement zone as the samples to be identified are frequently utilized as proxies to identify the local bioavailable isotope range (Burton and Price 2013:316). Food and drinking water have source-specific isotope ratios that are in turn reflected as a mixed isotopic ratio in a consumer's body (Söllner et al. 2016). When choosing comparative proxy materials to determine bioavailable $^{87}Sr/^{86}Sr$, the most ideal choice is human dental enamel from individuals that are 1)

contemporaries of those whose origin is in question and are 2) known or strongly believed to be local (Burton and Price 2013:316). Archaeological small-range faunal skeletal tissues (enamel or bone) from organisms with similar diets and procurement zones to the research sample represent a second choice proxy. Choosing the correct comparison material to refine geologic/hydrologic $^{87}Sr/^{86}Sr$ ranges is vital for generating a realistic isotope pool for a given locale.

Taken together, factors including geological bedrock and sediment, water, and biological proxies represent an isotope catchment. Preliminary bedrock and water comparisons may be made through the use of "large-scale, process-driven isoscapes," such as those produced by Bataille and Bown (2012) and Beard and Johnson (2000) (Widga et al. 2017:1). However, each natal region and time period comparison incorporates its own complicating factors, such as proximity to the sea, wind patterns, home ranges, and changes in diet and behavior from prehistoric to modern contexts. Burton and Price caution, "failure to assess and sample the appropriate isotope catchment could easily yield a contrary interpretation of locality," (2013:314).

A pilot study was conducted to test the feasibility of $^{87}Sr/^{86}Sr$ research as an additional line of evidence to support individual identifications within the cemetery (Freire and Jordan 2015). This study was completed in 2015 and was supported by the University of Wisconsin-Milwaukee Cultural Resource Management program. In the pilot study, the first and third permanent molars of nine individuals with robust putative identifications were sampled to generate $^{87}Sr/^{86}Sr$ signatures. For all individuals in the pilot study, there was agreement between multiple lines of evidence, including biological profiles, material culture, distinctive pathologies that matched death certificates, and excavation data to support an individual identification. For seven individuals, there was concordance between their $^{87}Sr/^{86}Sr$ values and the natal regions

recorded in the *Register of Burial at Milwaukee County Poor Farm*. In the case of the two individuals for whom $^{87}Sr/^{86}Sr$ signatures were consistent with contiguous geological formations that spanned political boundaries, the region most parsimonious with the *Register* entry was given preference, as a preponderance of evidence existed to support the individual identifications prior to $^{87}Sr/^{86}Sr$ analysis.

In the course of completing this preliminary study, a project-specific model for developing $^{87}Sr/^{86}Sr$ isotope catchments was established. This was necessary due to the varying availability of comparative proxy data for each of the natal regions in question. The Milwaukee County Poor Farm Cemetery project model was developed with the assistance of Dr. Eric Gulbranson, a visiting professor of Geology at the University of Wisconsin-Milwaukee (personal communication 24 February 2015). Development of the model identified sources of information for hydrology, bedrock, sediment, and human/faunal proxies from regions of the world with specific relevance to the history of this cemetery, including Central and Eastern Europe and the Midwestern United States, and also established a tiered preference protocol for $^{87}Sr/^{86}Sr$ proxy material.

With regard to the local bioavailable range, substantial baseline strontium isotope research has been conducted at the prehistoric Aztalan site, approximately 30 miles west of Milwaukee (Price et al. 2007). Given the similar sediments and the heavy glaciations of southeast Wisconsin that resulted in a largely homogeneous ground moraine (in terms of $^{87}Sr/^{86}Sr$), the Price et al. (2007) study offers a reasonable source for comparative proxy materials to identify the local bioavailable range. Four samples, representing identified, locally born individuals and fauna recovered from the Milwaukee County Poor Farm Cemetery were

added to this project's data set to strengthen and provide a comparison with the pre-existing local range established by Price et al. (2007).

Materials

Of the three primary components of a human tooth, enamel is the hardest and most inorganic. By substituting for calcium in inorganic apatite, strontium is incorporated into human enamel (Radhakrishan 2011). Drawing on its acellular, avascular, and non-regenerational properties, Montgomery (2010) describes enamel as an "archive". This analogy aptly describes how teeth "lock in" isotopic signatures of a particular diet and region (Montgomery 2010:326; Schwarcz et al. 2010:336). The skeleton actively remodels over the course of an individual's life, thus $^{87}Sr/^{86}Sr$ signatures from archaeological bone will reflect the last years of life history, rather than a natal region, in the case of an immigrant (Schwarcz 2010:336). The material of choice for deriving strontium isotope samples will thus depend on the research question, and there may be research-specific rationales for the exclusive use of bone as part of a multi-evidentiary tool kit (Budd et al. 2000; Price 2007; Lee-Thorp 2008). Diagenesis is a concern for all $^{87}Sr/^{86}Sr$ studies (Budd 2000; Lee-Thorp 2008). When compared with bone or dentine, the greater bond strength of enamel makes it an ideal material for isotope analysis, as it is less prone to environmental exchange and post-depositional diagenesis (Pye 2004). For all samples in this project, dental enamel was used as a sample material. The use of enamel as a sample material helps avoid issues of diagenesis in a cemetery context with a perched water table that has caused periodic episodes of flooding within the cemetery (Richards et al. 2016).

By incorporating the first and third permanent molars, data may be generated that reflect "the $^{87}Sr/^{86}Sr$ ratios in the body, and therefore in the diet, in the months and years of enamel formation," (Knudson et al. 2016:592). An environmental picture encompassing the weeks

before birth through approximately 15 years of age is created when both first and third molars are utilized for sampling (Hillson 1996; Pye 2004; White and Folkens 2005). Mineralization of the first permanent molars occurs between 30 fetal weeks through approximately 3 years of age (Knudson et al. 2016:592). Mineralization of the third molar occurs within a period lasting 3-3.4 years, beginning "between 7 and 13 years and mineralization is generally complete by 12-17 years," (Knudson 2016:592). A dental mineralization chart is illustrated in Table 4.1. The additional use of the permanent third molar enables the consideration of two important factors; 1) the possibility of early childhood migration, or migration of the mother, in that 2) the first permanent molar, because of pre-natal and early life mineralization, will receive strontium input from the mother through pregnancy diet, lactation, and maternal transfer from tooth and skeletal development in *utero* (Montgomery 2010; *see also* Gulson 2011 for reservoir effects of heavy elements, specifically lead). Per Montgomery, "strontium is already an average of several months or even years of strontium ingestion *before* it is incorporated into the enamel," (2010:330; emphasis in original).

Table 4.1. Dental mineralization chart, after Pye (2004); Woelfel and Schied (2002).

Element	**Permanent Tooth**	**Hard Tissue Formation (*years*)**	**Crown Completion (*years*)**	**Emergence (*years*)**	**Root Completion (*years*)**
Maxilla	First Molar	Birth	2.5-3	6-7	9-10
	Second Molar	2.5-3	7-8	12-15	14-16
	Third Molar	7-9	12-16	17-21	18-25
Mandible	First Molar	Birth	2.5-3	6-7	9-10
	Second Molar	2.5-3	7-8	11-13	14-15
	Third Molar	8-10	12-16	17-21	18-25

Sample Selection

The concept of "Category B" burials stems from a deviation, in some form, from "Category A" burials. As historical archaeologists, our expectations prior to excavation are

informed by historic documents, specifically in this case, Rule 17. We expected to find one single individual per coffin, positioned in accordance with the dominant Christian eschatology at the time, supine, with the head to the west. We also expected to find grave goods that correspond to categories including clothing, shrouds, or personal items. Approximately one-quarter of Cemetery II (47BMI0076) interments excavated in 2013 in did not meet expectations for standard, institutionalized pauper burials and ongoing analyses suggest that this is the case for the burials excavated in 1991-1992 as well. Departures from expectation were identified by the excavators (Richards et al. 2016; Richards et al. 2017) and informed the criteria for inclusion within this project's Category B.

The first criterion is evidence of postmortem intervention, specifically severing or sectioning cuts to elements, beyond cuts associated with an autopsy (Richards et al. 2017:243). The second criterion is the presence of more than one individual in a coffin, reflecting either a mixed or commingled burial context. Recall that the term "mixed burial" is an internal Milwaukee County Poor Farm Cemetery Project categorization that refers to a recovery context "where at least one individual was more than 50% complete but where other remains could be individualized and assigned multiple lot numbers,"(Richards et al. 2016:40). This is distinguished from a commingled context, "where individuality was unclear and a single lot number was assigned to all remains regardless of the minimum number of individuals represented," (Richards et al. 2016:40). Osteological analysis of commingled lots included a determination of the minimum number of individuals (MNI) recovered (Richards et al. 2016:51). The third criterion is missing elements without evidence of burial disturbance, suggesting potential curation on the part of the medical establishment. Historical documentation, including the *Rules and Regulations for the Government of Milwaukee County Hospital* and the reports to

the Board of Trustees for the Milwaukee County Poor provide evidence of this practice (Board of Trustees 1880; Hanson 1910; Richards et al. 2016). The fourth criterion for inclusion is the presence of grave inclusions such as medical and hospital objects, including autopsy tools, research items, and medical waste or utilitarian objects, including a bowl, tire iron, and garden rake (Richards et al. 2016; Richards et al. 2017). To explore whether the isotopic signatures of individuals within and between these categories differed, 30 individuals from Category A single adult burials, one individual per coffin, and 30 individuals from Category B, a burial category associated with local institutions such as medical colleges, county pathology laboratory, and the Coroner's Office, were selected.

At the time of sample selection, the skeletal analysis of individuals recovered from the 1991-1992 Milwaukee County Poor Farm Cemetery excavation had not been completed. Tooth-level maxillary and mandibular inventories were unavailable, but field burial inventories and initial inventories completed when the collection arrived at the University of Wisconsin-Milwaukee were extremely helpful in generating lists of adults with likely in-situ first and third molars. However, even with the application of this criterion, the number of potential sample candidates greatly exceeded the 30 individuals needed for the control sample of standard single adult burials. Selection was further refined in consultation with the Principal Investigator of the Milwaukee County Poor Farm Cemetery Project by choosing individuals from each of the primary areas of the cemetery. Several of these sections have known dates, while others have wider ranges, with dates provided through coffin hardware or coins. Finally, each of the individuals selected as part of the single adult Category A group came from an interment context that reflected the typical Milwaukee County Poor Farm Cemetery burial program as outlined above.

As with the single adult sample selection, a list of potential Category B sample lots was generated through the combination of excavation paperwork and initial field inventories. It was frequently the case that the individuals in Category B burials were interred without crania or mandibles. Thus, while the standard of selecting individuals with in-situ first and third molars was adhered to where possible, in some cases it was necessary to use second molars in lieu of absent first or third molars to achieve a sample size of 30 individuals. Samples were drawn from various areas of Cemetery II (47BMI0076) based on the availability of permanent molars.

An additional four samples, representing local individuals and fauna, were added to further develop the southeast Wisconsin bioavailable $^{87}Sr/^{86}Sr$ profile for comparison purposes. The permanent molars from two identified Milwaukee-born individuals interred within the cemetery, Willie Rosche and his sister Rosa Rosche, were sampled. Willie and Rosa are two of the five Rosche children that were interred at the cemetery in 1894. Willie, aged 12, has permanent first, second, and third molars. Willie's third molar was not sampled, as the texture of the enamel and visual inspection under a microscope suggested that this tooth was not fully mineralized. Rosa, aged 9, has fully mineralized permanent first molars. Her third molars are in the process of mineralization and given the fragility of the tooth buds, were not sampled. A faunal sample was drawn from a first molar of a one-year old dog that was interred within a coffin at the cemetery, Burial Lot # 10508. While death certificates indicate that adult individuals born in Milwaukee were interred at the cemetery, at the time of this writing, these individuals had not been identified.

Full osteological analyses, including inventory, biological profile, pathology, and taphonomy assessments, were completed for individuals in each sample category (A and B) and for individuals within the local bioavailable $^{87}Sr/^{86}Sr$ group [See Appendix A for individual

burial descriptions, including the results of osteological analyses]. Biological profiles for both sample groups were completed according to standard osteological methods (Buikstra and Ubelacker 1994; Spradley and Jantz 2011; White, Black, and Folkens 2011).

A total of 123 human teeth from 62 individuals from the 1991-92 Milwaukee County Poor Farm Cemetery Collection and 2013 excavation were analyzed for $^{87}Sr/^{86}Sr$ isotope ratios. A single first molar from a domestic dog burial recovered during the 2013 excavation was analyzed for an $^{87}Sr/^{86}Sr$ isotope ratio. Two teeth in good condition, the permanent first molar and the permanent third molar, were analyzed for each individual. In ten cases where a first or third molar was not available, a second molar was sampled. In two cases, only one tooth was sampled. Destructive sampling was performed at the Stable Isotope Laboratory in the Department of Anthropology at the University of Illinois at Urbana-Champaign. Mass spectrometry was performed at the Multicollector Inductively Coupled Plasma Mass Spectrometer (MC-ICP-MS) Laboratory in the Department of Geology at the University of Illinois at Urbana-Champaign. Sample processing was completed at the University of Illinois at Urbana-Champaign to ensure methodological continuity with the 18 signatures produced for the pilot study. Matthew Fort, a technician at the Stable Isotope Laboratory, performed the sampling and mass spectrometry with assistance from the author.

Methods

Prior to destructive sampling, each element was washed with a soft brush and water to remove excess dirt and increase the effectiveness of sonication in UV-treated water. Following preliminary cleaning, each element was photographed using a Nikon D7000 Digital SLR camera. Photographs included a scale, were labeled with the project number, burial lot number, and the teeth were numbered in sequence (e.g. Teeth 30 and 32) by sample. These photographs were

utilized in two ways. First, a provenience inventory was made for each trip to the University of Illinois at Urbana-Champaign. Two photos of each element to be sampled were included within the inventory, as was a return-trip checklist for each burial lot. Each box used to transport elements contained a copy of the inventory for the elements included; this also served as an inventory for the transport box. Second, the pre-photos were included within a custom laboratory book in lieu of sketches of each element to be sampled [for example pages from the custom laboratory book, see Appendix B; for the provenience inventory, see Appendix C]. Following the pre-sample photograph, dental calculus was removed with a sterile scalpel to preserve larger, more intact samples of calculus for future study.

Sample preparation was undertaken following the procedures outlined in Ambrose 1993; Balasse et al. 2002; Hedman et al. 2009; and Slater et al. 2014. Elements were visually inspected under a microscope to choose the best surface of the tooth (buccal or lingual) for sampling. Surfaces near dental caries, fillings, or discolored enamel were avoided. In most cases, the lingual surface was selected for sampling. Approximately 100 μm of surface material was removed from tooth enamel with a carbide tipped hand-held drill to prepare the surface to be sampled. Samples were cleaned by sonication in UV-treated water, followed by desiccation overnight in a vacuum chamber. Following desiccation, maxillary or mandibular elements were wrapped in Parafilm where necessary to prevent contamination by the exfoliation of bone material during drilling. Tooth enamel was removed from the carbide abraded surface using a diamond-tipped hand-held drill and enamel samples were inspected under a microscope to ensure purity. A six-step chemical treatment of the enamel sample followed. First, to remove organic matter, samples were treated with a 2.363% solution of NaOCl overnight. Next, samples were rinsed to neutral four times. Then, 0.1M acetic acid was added to each sample. Four hours later,

the samples were rinsed to neutral four times. Then, the samples were placed in a freezer for one hour and freeze-dried under vacuum overnight (lyophilized). All rinses were completed using deionized water.

To prepare for mass spectrometry, a standard sample preparation method for separating strontium from other elements using a strontium-specific resin was performed (Hedman et al. 2009; Slater et al. 2014). Approximately 3-5 milligrams of prepared enamel apatite were weighed out for each sample. Using Teflon cation exchange columns loaded with Eichrom Sr spec resin, strontium was separated using the following process. First, reservoirs were washed with 0.05N HNO3. Next, in the precondition step, 500 microliters of 3N HNO_3 was added to each sample. This was followed by the wash step, adding 0.3 ml of 3 N HNO_3 three times for each sample. Next, 1 ml of 8 N HNO_3 was added to each sample, followed by 0.3 ml of 3 N HNO_3 . These steps were followed to remove interfering elements, particularly barium and to increase the affinity of cations for the strontium resin. The strontium for each sample was eluted by adding 1 ml 0.05 N HNO_3 , 1 ml nano water, and 2 ml nano water to each sample, with each sample dripped into MC-ICP-MS vials for Sr collection. Mass spectrometry was performed using a Nu Plasma HR multicollector ICP-mass spectrometer at the University of Illinois at Urbana-Champaign.

Once sampling was completed, elements were returned to the University of Wisconsin-Milwaukee. Post-sampling photographs were taken following the same procedure outlined above. A destructive testing form was completed, outlining the specific changes and procedures applied to the sampled elements. This form was added to each excavated burial's paperwork and a digital form was added to the University of Wisconsin-Milwaukee Archaeological Research Laboratory server. Pre- and post- sampling photographs were also uploaded to their

corresponding burial paperwork folder on the server. Examples of the pre- and post-sampling photographs are illustrated in Figures 4.1 and 4.2.

Figure 4.1. Pre-sampling photo of Tooth 2, Burial Lot # 10809, buccal view. Photo by author.

Figure 4.2. Post-sampling photo of Tooth 2, Burial Lot # 10809, buccal view.
Area of sampling illustrated with arrow. Photo by author.

Chapter 5: Results and Analysis

Mass Spectrometry Results

The following tables present the mass spectrometry results and additional osteological context. Table 5.1 provides information contained in the official report provided by the Department of Geology at the University of Illinois at Urbana-Champaign. For replicability and application to future research, the official statement is included in full:

> "The samples were analyzed using procedures that are common in the geochemistry research community: Sr was purified via ion exchange using a Sr-specific resin. Mass spectrometry was performed using a Nu Plasma HR multicollector ICP-mass spectrometer. Mass bias correction was done by internal normalization (assumed $^{86}Sr/^{88}Sr = 0.11940$), and corrections were made for small interferences, if present, by Kr, Rb, and Ba. Results were normalized using analyses of NIST SRM-987 (accepted $^{87}Sr/^{86}Sr = 0.710255$). Estimated precision is ±0.00005," (Johnson 2017:1).

The first four or five-digit number of the Sample ID refers to the individual lot number, i.e. Burial Lot 1006, per the internal Milwaukee County Poor Farm Cemetery Project provenience system. The second two-digit number refers to the tooth sampled in the Universal Numbering System (UNS) format (Choudhary 2001). This numbering system was utilized throughout the sampling process to eliminate potential confusion with super/subscripts when labeling microcentrifuge tubes or vials. Tooth identifications in the side-tooth-number (RM^1) format have been provided in parentheses following each Sample ID for readers unfamiliar with the UNS. Lastly, the five-digit decimal number accompanying each Sample ID represents the ratio of $^{87}Sr/^{86}Sr$. Results were reported to the fifth decimal place.

Table 5.1. Results of mass spectrometry.

Sample ID	**$^{87}Sr/^{86}Sr$**		**Sample ID**	**$^{87}Sr/^{86}Sr$**
1006-30 (RM_1)	0.71208		7195-3 (RM^1)	0.70723
1006-32 (RM_3)	0.71122		7195-1 (RM^3)	0.70693
1009-30 (RM_1)	0.71004		8047-30 (RM_1)	0.71040
1009-32 (RM_3)	0.70949		8047-32 (RM_3)	0.70994

Sample ID	$^{87}Sr/^{86}Sr$		Sample ID	$^{87}Sr/^{86}Sr$
2008-19 (LM_1)	0.70957		8113-30 (RM_1)	0.71034
2008-32 (RM_3)	0.71002		8113-32 (RM_3)	0.71047
2051-19 (LM_1)	0.71041		8114-14 (LM^1)	0.70992
2051-17 (LM_3)	0.71253		8114-16 (LM^3)	0.70985
2052-14 (LM^1)	0.71114		8125-14 (LM^1)	0.71043
2052-16 (LM^3)	0.71135		8125-15 (LM^2)	0.71087
2075-14 (LM^1)	0.71104		8130-14 (LM^1)	0.71112
2075-16 (LM^3)	0.71068		8130-2 (RM^2)	0.71078
2095-14 (LM^1)	0.71071		8133-30 (RM_1)	0.71057
2095-1 (RM^3)	0.71111		8133-31 (RM_2)	0.70993
3063-14 (LM^1)	0.71032		8174-19 (LM_1)	0.71045
3063-17 (LM_3)	0.70986		8174-17 (LM_3)	0.71067
3064-14 (LM^1)	0.71096		8180-30 (RM_1)	0.71137
3064-16 (LM^3)	0.71080		8180-17 (LM_3)	0.71019
3065-3 (RM^1)	0.71089		8199-14 (LM^1)	0.71072
3065-1 (RM^3)	0.70996		8199-18 (LM_2)	0.71088
3070-3 (RM^1)	0.70875		9223-19 (LM_1)	0.71089
3070-1 (RM^3)	0.70851		9223-17 (LM_3)	0.70998
5033-19 (LM_1)	0.70933		9262-32 (RM_3)	0.70980
5033-17 (LM_3)	0.70934		9263-19 (LM_1)	0.71232
5077-30 (RM_1)	0.71082		9263-17 (LM_3)	0.71068
5077-32 (RM_3)	0.71086		10093-19 (LM_1)	0.71152
5230-30 (RM_1)	0.71141		10093-17 (LM_3)	0.71087
5230-32 (RM_3)	0.71078		10097-30 (RM_1)	0.70950
5242-19 (LM_1)	0.70839		10097-31 (RM_2)	0.70948
5242-17 (LM_3)	0.70850		10099-19 (LM_1)	0.70944
7014-30 (RM_1)	0.71117		10099-17 (LM_3)	0.70950
7014-32 (RM_3)	0.70956		10314-30 (RM_1)	0.71123
7017-19 (LM_1)	0.71056		10314-32 (RM_3)	0.71076
7017-17 (LM_3)	0.71054		10328-3 (RM^1)	0.70978
7021-14 (LM^1)	0.71034		10328-17 (LM_3)	0.70968
7021-16 (LM^3)	0.71153		10343-14 (LM^1)	0.71084
7022-30 (RM_1)	0.70885		10343-16 (LM^3)	0.71096
7022-17 (LM_3)	0.70880		10451-30 (RM_1)	0.70944
7072-3 (RM^1)	0.71011		10451-32 (RM_3)	0.70900
7072-1 (RM^3)	0.71046		10460-19 (LM_1)	0.71029
7080-19 (LM_1)	0.71276		10460-17 (LM_3)	0.70978
7080-17 (LM_3)	0.71303		10533-31 (RM_2)	0.71155
7081-30 (RM_1)	0.71012		10533-17 (LM_3)	0.71159
7081-31 (RM_2)	0.70976		10671-30 (RM_1)	0.70963
7090-19 (LM_1)	0.71111		10671-17 (LM_3)	0.70966
7090-17 (LM_3)	0.71085		10702-30 (RM_1)	0.71172
7091-14 (LM^1)	0.70967		10702-32 (RM_3)	0.71084
7091-1 (RM^3)	0.70946		10707-3 (RM^1)	0.70599
7092-14 (LM^1)	0.71048		10707-1 (RM^3)	0.70831

Sample ID	$^{87}Sr/^{86}Sr$		Sample ID	$^{87}Sr/^{86}Sr$
7092-16 (LM^3)	0.71015		10735-19 (LM_1)	0.71119
7109-31 (RM_2)	0.70982		10735-17 (LM_3)	0.71092
7109-1 (RM^3)	0.70974		10808-30 (RM_1)	0.70887
7179-30 (RM_1)	0.70908		10808-32 (RM_3)	0.70888
7179-32 (RM_3)	0.70927		10809-30 (RM_1)	0.70949
7180-3 (RM^1)	0.70936		10809-2 (RM^2)	0.70946
7180-1 (RM^3)	0.70942		10811-19 (LM_1)	0.71264
7181-30 (RM_1)	0.70984		10811-18 (LM_2)	0.71027
7181-32 (RM_3)	0.70987		**Local Bioavailable $^{87}Sr/^{86}Sr$ Samples**	
7186-30 (RM_1)	0.71036		9321-19 (LM_1)	0.70936
7186-32 (RM_3)	0.70894		9322-30 (RM_1)	0.70947
7194-30 (RM_1)	0.71052		9322-31 (RM_2)	0.70931
7194-32 (RM_3)	0.70999		10508- RM_1	0.70972

Results in Osteological Contexts

Tables 5.2 and 5.3 contextualize the strontium results for each sample in Categories A and B with basic biological profile information for each individual. The following information applies to both tables. The sex estimate combines anthroposcopic assessments of non-metric traits of the pelvis and skull with osteometric measurements of the femur, talus, and humerus. The ancestry estimate combines assessment of the mid-facial region, teeth, and the femur following Hefner (2009), L'Abbé (2011), and Byers (2008). The age category designation corresponds to internal Milwaukee County Poor Farm Cemetery Project divisions that separate adults into three categories based on the mean age of an individual: young (20-34.9 years), middle (35-49.9 years), and old (50+ years) (*see* Richards et al. 2016). The age range reflects the lowest and highest range ages from one or more of the following age estimation assessments: pubic symphysis (Todd and Suchey-Brooks), auricular surface, and cranial suture scores. The mean age category reflects the average of the lowest and highest mean ages derived from the preceding techniques. While the estimated mean age of an individual may not typically be included in project reports, it is included here for its potential to aid in individual identifications. In cases where preservation prevented an age estimation through the above techniques, a fusion

assessment was completed to provide confirmation of an 'adult' designation. The strontium isotope results are identified by tooth type, in both a conventional archaeological descriptive format (e.g. RM_1) and in the Universal Numbering System format (e.g. Tooth 30).

Table 5.2. Strontium isotope sample results by burial lot number, Category A.

Lot Number	Sex Est.	Ancestry Est.	Age Category	Age Range	Mean Age	$^{87}Sr/^{86}Sr$ Signatures
1006	Male	European	Middle Adult	20-69	42.0	RM_1 (30): 0.71208 RM_3 (32): 0.71122
1009	Male	European	Middle Adult	20-83	45.1	RM_1 (30): 0.71004 RM_3 (32): 0.70949
2051	Probable Male	African	Middle Adult	20-75	46.4	LM_1 (19): 0.71041 LM_3 (17): 0.71253
2052	Probable Male	European	Middle Adult	20-75	41.5	LM^1 (14): 0.71114 LM^3 (16): 0.71135
2075	Male	European	Middle Adult	20-75	42.0	LM^1 (14): 0.71104 LM^3 (16): 0.71068
2095	Male	European	Middle Adult	20-69	43.55	LM^1 (14): 0.71071 LM^3 (1): 0.71111
3063	Male	European	Old Adult	24-82	52.3	LM^1 (14): 0.71032 LM_3 (17): 0.70986
3065	Male	European	Middle Adult	20-75	47.2	RM^1 (3): 0.71089 RM^3 (1): 0.70996
3070	Male	European	Middle Adult	20-69	42.0	RM^1 (3): 0.70875 RM^3 (1): 0.70851
5230	Male	European	Old Adult	33-61	51.5	RM_1 (30): 0.71141 RM_3 (32): 0.71078
5242	Probable Male	European	Middle Adult	20-75	46.5	LM_1 (19): 0.70839 LM_3 (17): 0.70850
7014	Male	European	Middle Adult	20-75	47.8	RM_1 (30): 0.71117 RM_3 (32): 0.70956
7017	Male	European	Middle Adult	20-75	47.8	LM_1 (19): 0.71056 LM_3 (17): 0.71054
7021	Probable Male	European	Indeterminate Adult	20+	N/A	LM^1 (14): 0.71034 LM^3 (16): 0.71153

Lot Number	Sex Est.	Ancestry Est.	Age Category	Age Range	Mean Age	$^{87}Sr/^{86}Sr$ Signatures
7022	Male	European	Middle Adult	20-75	41.1	RM_1 (30): 0.70885 LM_3 (17): 0.70880
7080	Male	European	Young Adult	20-46	29.5	LM_1 (19): 0.71276 LM_1 (17): 0.71303
7081	Probable Male	European	Middle Adult	34-60	48.8	RM_1 (30): 0.71012 RM_2 (31): 0.70976
7179	Male	European	Middle Adult	20-69	38.6	RM_1 (30): 0.70908 RM_3 (32): 0.70927
7180	Male	European	Middle Adult	20-69	35.75	RM^1 (3): 0.70936 RM^3 (1): 0.70942
7186	Male	European	Indeterminate Adult	20+	N/A	RM_1 (30): 0.71036 RM_3 (32): 0.70894
7194	Ambiguous	European	Indeterminate Adult	20+	N/A	RM_1 (30): 0.71052 RM_3 (32): 0.70999
7195	Probable Male	European	Indeterminate Adult	20+	N/A	RM^1 (3): 0.70723 RM^3 (1): 0.70693
8113	Male	European	Young Adult	19-46	29.8	RM_1 (30): 0.71034 RM_3 (32): 0.71047
10093	Probable Male	European	Young Adult	19-44	21.1	LM_1 (19): 0.71152 LM_3 (17): 0.71087
10314	Probable Male	European	Middle Adult	20-75	43.0	RM_1 (30): 0.71123 RM_3 (32): 0.71076
10343	Male	European	Indeterminate Adult	20+	N/A	LM^1 (14): 0.71084 LM^3 (16): 0.71096
10671	Male	European	Middle Adult	19-75	36.4	RM_1 (30): 0.70963 LM_3 (17): 0.70966
10702	Probable Male	European	Middle Adult	30-65	44.3	RM_1 (30): 0.71172 RM_3 (32): 0.71084
10735	Male	European	Middle Adult	25-83	43.75	LM_1 (19): 0.71119 LM_3 (17): 0.71092
10808	Male	European	Young Adult	20-46	29.5	RM_1 (30): 0.70887 RM_3 (32): 0.70888

Table 5.3. Strontium isotope sample results by burial lot number, Category B.

Lot Number	Sex Est.	Ancestry Est.	Age Category	Age Range	Mean Age	$^{87}Sr/^{86}Sr$ Signatures
2008	Female	European	Young Adult	19-40	25.25	LM_1 (19): 0.70957 RM_3 (32): 0.71002
3064	Male	European	Middle Adult	34-60	48.8	LM^1 (14): 0.71096 LM^3 (16): 0.71080
5033	Male	European	Middle Adult	20-75	48.3	LM_1 (19): 0.70933 LM_3 (17): 0.70934
5077	Male	European	Old Adult	29-89	58.9	RM_1 (30): 0.71082 RM_3 (32): 0.71086
7072	Female	European	Young Adult	20-46	29.5	RM^1 (3): 0.71011 RM^3 (1): 0.71046
7090	Female	European	Middle Adult	35-56	45.0	LM_1 (19): 0.71111 LM_3 (17): 0.71085
7091	Ambiguous	European	Indeterminate Adult	20+	N/A	LM^1 (14): 0.70967 RM^3 (1): 0.70946
7092	Male	European	Young Adult	20-57	32.35	LM^1 (14): 0.71048 LM^3 (16): 0.71015
7109	Male	European	Middle Adult	20-61	37.35	RM_2 (31): 0.70982 RM^3 (1): 0.70974
7181	Male	European	Middle Adult	20-75	47.8	RM_1 (30): 0.70984 RM_3 (32): 0.70987
8047	Male	European	Old Adult	33-61	51.5	RM_1 (30): 0.71040 RM_3 (32): 0.70994
8114	Probable Male	European	Middle Adult	20-69	35.75	LM^1 (14): 0.70992 LM^3 (16): 0.70985
8125	Male	European	Old Adult	34-86	54.35	LM^1 (14): 0.71043 LM^2 (15): 0.71087
8130	Probable Male	European	Middle Adult	20-75	44.65	LM^1 (14): 0.71112 RM^2 (2): 0.71078
8133	Male	European	Middle Adult	34-60	48.8	RM_1 (30): 0.71057 RM_2 (31): 0.70993
8174	Male	European	Old Adult	24-82	53.1	LM_1 (19): 0.71045 LM_3 (17): 0.71067

Lot Number	Sex Est.	Ancestry Est.	Age Category	Age Range	Mean Age	$^{87}Sr/^{86}Sr$ Signatures
8180	Male	European	Middle Adult	20-69	38.6	RM_1 (30): 0.71137 LM_3 (17): 0.71019
8199	Probable Male	European	Indeterminate Adult	20+	N/A	LM^1 (14): 0.71072 LM_2 (18): 0.71088
9223	Male	European	Middle Adult	20-75	47.8	LM_1 (19): 0.71089 LM_3 (17): 0.70998
9262	Probable Male	European	Young Adult	20-57	32.35	No second sample. RM_3 (32): 0.70980
9263	Male	European	Old Adult	29-89	55.6	LM_1 (19): 0.71232 LM_3 (17): 0.71068
10097	Male	European	Middle Adult	26-70	38.2	RM_1 (30): 0.70950 RM_2 (31): 0.70948
10099	Probable Male	European	Middle Adult	26-70	40.1	LM_1 (19): 0.70944 LM_3 (17): 0.70950
10328	Male	African	Middle Adult	21-60	36.25	RM^1 (3): 0.70978 LM_3 (17): 0.70968
10451	Male	European	Middle Adult	20-75	49.85	RM_1 (30): 0.70944 RM_2 (32): 0.70900
10460	Probable Female	European	Young Adult	20-65	43.15*	LM_1 (19): 0.71029 LM_3 (17): 0.70978
10533	Probable Male	European	Indeterminate Adult	20+	N/A	RM_2 (31): 0.71155 LM_3 (17): 0.71159
10707	Probable Male	European	Young Adult	15-27	20.25	RM^1 (3): 0.70599 RM^3 (1): 0.70831
10809**	Not Observable	Not Observable	Not Observable	-	N/A	RM_1 (30): 0.70949 RM^2 (2): 0.70946
10811	Male	European	Young Adult	15-52	30.25	LM_1 (19): 0.71264 LM_2 (18): 0.71027

* Age range adjusted down to 20-65 to accommodate visual estimate of age markers, including visible epiphyseal lines on both radii and ulnae and incomplete eruption of the RM_3.
** This individual was of an atypical small size. Standard assessments of sex, age, ancestry, and stature were not possible.

Table 5.4 contextualizes the strontium results for each sample in the bioavailable $^{87}Sr/^{86}Sr$ group with basic biological profile information for each individual and the dog. Sex estimations were not completed for juvenile individuals, "as sexually dimorphic characteristics are not fully formed until well after the onset of puberty," (Richards et al. 2016:168). The age category designation corresponds to internal Milwaukee County Poor Farm Cemetery Project divisions that separate juveniles into 8 categories based on the age estimation assessments outlined below. Juvenile age categories include: fetal (9-40 fetal weeks); neonate (birth to 28 days); infant (29 days to 11.9 months); toddler (1 year to 2.49); early child (2.5 years to 5.9 years); late child (6 years to 12.9 years); adolescent (13 years to 19.9 years) (*see* Richards et al. 2016). The age range reflects the estimated range produced through one of the following assessment techniques. These assessment techniques are ranked in order of preference, replicability, and applicability to this particular skeletal collection. Assessments for dental mineralization, development, and resorption are given preference over osteometric assessment. Dental mineralization, development, and resorption are assessed using the London Atlas (AlQahtani et al. 2010), Ubelaker (1989), and Lysell et al. (1962). Osteometric assessment utilizes the following methods: fetal, Fazekas and Kósa (1978); post 40 fetal weeks, Maresh (1970); quadratic regression formulae equations for long bones: Primaeau et al. (2016). The osteological age estimates for Willie and Rosa Rosche are consistent with their documented age at death (12 and 9 years of age, respectively). The age of the dog was estimated through a combination of dental eruption and fusion assessment. The strontium results are identified by tooth type, in both a conventional archaeological descriptive format (e.g. RM_1) and in the Universal Numbering System format (e.g. Tooth 30).

Table 5.4. Strontium isotope sample results by burial lot number, bioavailable $^{87}Sr/^{86}Sr$ group.

Lot Number	Sex Est.	Age Category	Age Range	$^{87}Sr/^{86}Sr$ Signatures
9321 Rosa Rosche	-	Late Child	5-12 years	LM_1 (19): 0.70936 No second sample.
9322 Willie Rosche	-	Late Child	8.5-13 years	RM_1 (30): 0.70947 RM_2 (31): 0.70931
10508 Dog	Male	Sub-adult	1 year	RM_1 (19): 0.70972

Table 5.5 provides a comparison of sex estimates for Categories A and B. Sex estimates are presented in the internal Milwaukee County Poor Farm Cemetery project divisions that combine anthroposcopic sex estimates with osteometric assessments for an overall sex estimate (*see* Richards et al. 2016). While males dominate in both categories, Category B has more variety in sex estimates, particularly with respect to the presence of probable female and female individuals. This is consistent with the assertion made by Richards et al., "if you were a woman without a support system ultimately buried in the County Cemetery you were more likely than the males in your age category to be subject to postmortem intervention," (2016:231).

Table 5.5 Estimated sex breakdown for Category A and Category B samples.

Category	Female	Probable Female	Ambiguous	Probable Male	Male	No Markers
Category A	-	-	1	9	20	-
Category B	3	1	2	7	17	-

Table 5.6 provides a comparison of age estimates for Categories A and B. Age estimates are presented in the internal Milwaukee County Poor Farm Cemetery Project divisions based on the mean age of an individual: young (20-34.9 years), middle (35-49.9 years), old (50+ years), and indeterminate adult (20+) (*see* Richards et al. 2016). The majority of the individuals in both categories fall into middle adult category. Category B includes slightly more variety in estimated age ranges.

Table 5.6. Estimated age breakdown for Category A and Category B samples.

Category	Young Adult (20-34.9)	Middle Adult (35-49.9)	Old Adult (50+)	Indeterminate Adult (20+)	Not Observable	No Markers
Category A	4	19	2	5	-	-
Category B	7	14	5	3	1	-

For the osteological analysis of individuals recovered for the 2013 excavation, "individual ancestry assessments were not undertaken," (Richards et al. 2016:170). This decision was informed by several factors, including: the non-concordance of specific skeletal traits (i.e. lack of exclusivity to one group or another; 2016:169), the expression of which "becomes significantly more diffuse in intermixed immigrant populations," (2016:169), and "a marked lack of temporally and culturally relevant collections for use as comparative population," (2016:170). Per Richards et al., "in this approach we echo the sentiments of Michael L. Blakely who writes of the skeletal biology of individuals buried in New York's African Burial Ground," (2016:170; *see also* Blakely 2009). An approach utilizing extant historical documentation to supply "information regarding place of birth" was adopted as a proxy for ancestry in the 2013 Report of Investigations (Richards et al. 2016:170).

The decision to depart from previously published practice was not undertaken lightly. Blakely's point is well-taken, "the experiences of the people buried at these sites were dehumanized by the ostensible objectification of racial classification and ahistorical pathology assessments," (2009:40). However, given the anthropological literature that provides evidentiary support for postmortem investigative practices that differentially affected African American communities (*e.g.* Blakely and Harrington 1997; Halperin 2007; Humphrey 1973), it is important

to explore whether this pattern of behavior extended to the Milwaukee County medical establishment.

Table 5.5 provides a comparison of ancestry estimations for individuals in Categories A and B. Ancestry estimates are presented in the internal University of Wisconsin-Milwaukee Cultural Resource Management human skeletal biological profile divisions (Jones 2016). With three exceptions, the ancestry estimation for all individuals was European. This is consistent with available historical documentation (death certificates) that suggest the burial population of the Milwaukee County Poor Farm Cemetery was overwhelmingly, but not exclusively, comprised of individuals of European ancestry. Compared to neighboring Chicago, the African American population in Milwaukee was relatively small, "rising from 980 in 1910 to 2,229 in 1920," (2006:257; 259). Factors such as a small, close-knit community and relatively greater economic resources than recently arrived immigrants would have substantially reduced the likelihood of an African American individual becoming unclaimed at this time (recall that unclaimed bodies were a primary source of clinical material for the medical colleges) (Gurda 2006:67; 258). However, it should also be noted that the infrequent interment of individuals with their crania in Category B type burials might partially obscure patterns of ancestry within these burials.

Table 5.7. Ancestry estimations Category A and Category B samples.

Category	African	Asian	European	Native American	Admixed	Indt.	Not observable
Category A	1	-	29	-	-	-	-
Category B	1	-	28	-	-	-	1

Table 5.8 illustrates the relationship burial lots in Category B and the criteria for inclusion within this category with a presence/absence chart. Inclusion was dependent on the burial context meeting at least one of the following four criteria: severing or sectioning cuts to elements beyond cuts associated with an autopsy, more than one individual in a coffin, missing elements without evidence of burial disturbance, and grave inclusions including medical and hospital objects. The most frequent reason for inclusion in Category B was the presence of more than one individual within a coffin, followed by severing or sectioning cuts associated with postmortem intervention. Full burial descriptions of each lot appear in Appendix A.

Caveats are made for two burial lots. Burial Lot 3064 was included with Category B for severing or sectioning cuts to elements (excluding cuts associated with autopsy). A discussion of categories of postmortem investigation established for the Milwaukee County Poor Farm Cemetery Collection appears in the 2017 volume, *The Bioarchaeology of Dissection and Autopsy in the United States* (Richards et al. 2017). Richards et al. state,

> "Dissection can be determined by the presence of one or more of the following osteological markers: cross-section cuts to one or more postcranial elements, sometimes accompanied by superficial scratches, kerfs, and breakaway spurs on the bones; and extraneous cuts to the cranium which are not associated with craniotomy," (2017:244).

Unlike Burial Lot 2051, where sectioning cuts appeared to be a medical intervention associated with perimortem fractures, the sectioning cuts to the left femur, left tibia, and two sectioning cuts to the left fibula of Burial Lot 3064 are not associated with any apparent perimortem fractures. The left knee (complete distal femur, patella, proximal tibia, and fibula) was not recovered. Additionally, the right os coxa, right tibia, right fibula, and left foot were not recovered. However, there is not sufficient data available at this time to determine whether the elements not recovered reflect disturbance or absence at the time of interment. The second caveat applies to

Burial Lot 5077. At this time, based on the distribution and number of elements described as associated pit fill, it appears that Burial Lot 5077 is a mixed burial with more than one individual within the coffin, though this was not unambiguously noted in the excavation record.

Table 5.8. Summary of Category B by burial lot number.

Burial Lot Number	Severing or sectioning cuts to elements (excluding cuts associated with autopsy)	More than 1 individual within a coffin	Missing elements	Grave inclusions (medical/hospital or utilitarian)
8174	•	•	•	•
8180	•	•	•	•
8199	•	•	•	•
10809	•	•	•	•
10328	•	•	•	
10707	•	•	•	
10811		•	•	•
7181	•			•
10097	•	•		
10099		•		•
10460		•		•
2008	•			
3064	•		•	
7072		•	•	
5033		•		
5077		•		
7090				•
7991				•
7092				•
7109		•		
8047	•			
8114				•
8125	•			
8130	•			
8133	•			
9223	•			
9262		•		
9263				•
10451		•		
10533		•		
Totals:	**15/30**	**17/30**	**11-10/30**	**11/30**

Analysis of Strontium Isotope Results

The following sections provide statistical analyses of the previously illustrated strontium isotope results, including basic statistical analyses and visual representations of the dataset.

Basic Descriptive Statistics. The $^{87}Sr/^{86}Sr$ ratios of the 123 human teeth sampled range between 0.70599 and 0.71303. Table 5.9 illustrates basic descriptive statistics for Category A, Category B, and the bioavailable $^{87}Sr/^{86}Sr$ group, including the mean, median, and standard deviation of each group.

Table 5.9. Basic descriptive statistics of all $^{87}Sr/^{86}Sr$ signatures produced.

Group	Mean	Median	Standard Deviation
Bioavailable	0.70946	0.70941	0.00018
Category A	0.71026	0.71044	0.00121
Category B	0.71017	0.71011	0.00095

The bioavailable group is quite homogeneous, with a mean of 0.70946 ± 0.00018 ($1\sigma = 4$). Category A has the largest standard deviation of the three groups, with a mean of 0.71026 ± 0.00121 ($1\sigma = 60$). Category B, while comprising a slightly smaller dispersion of values, is nonetheless varied, with a mean of 0.71017 ± 0.00095 ($1\sigma = 59$).

A Shapiro-Wilk test of normality was run on the strontium value data ($^{87}Sr/^{86}Sr$ ratios) in order to determine whether the data conformed to a normal distribution. For the test, W=0.96601 and the p-value was 0.004173. This does not support a claim of normality. Additionally, as illustrated in Figure 5.1, when the data are plotted, they clearly do not conform to a normal distribution. For this reason, a non-parametric Wilcoxon rank sum test was conducted in order to compare the means of Category A and Category B, as opposed to a t-test. The results of the Wilcoxon rank test had a W=1914.5 and a p-value of 0.4441, concluding that there is no evidence that Category A and Category B significantly differ by overall mean strontium isotope value.

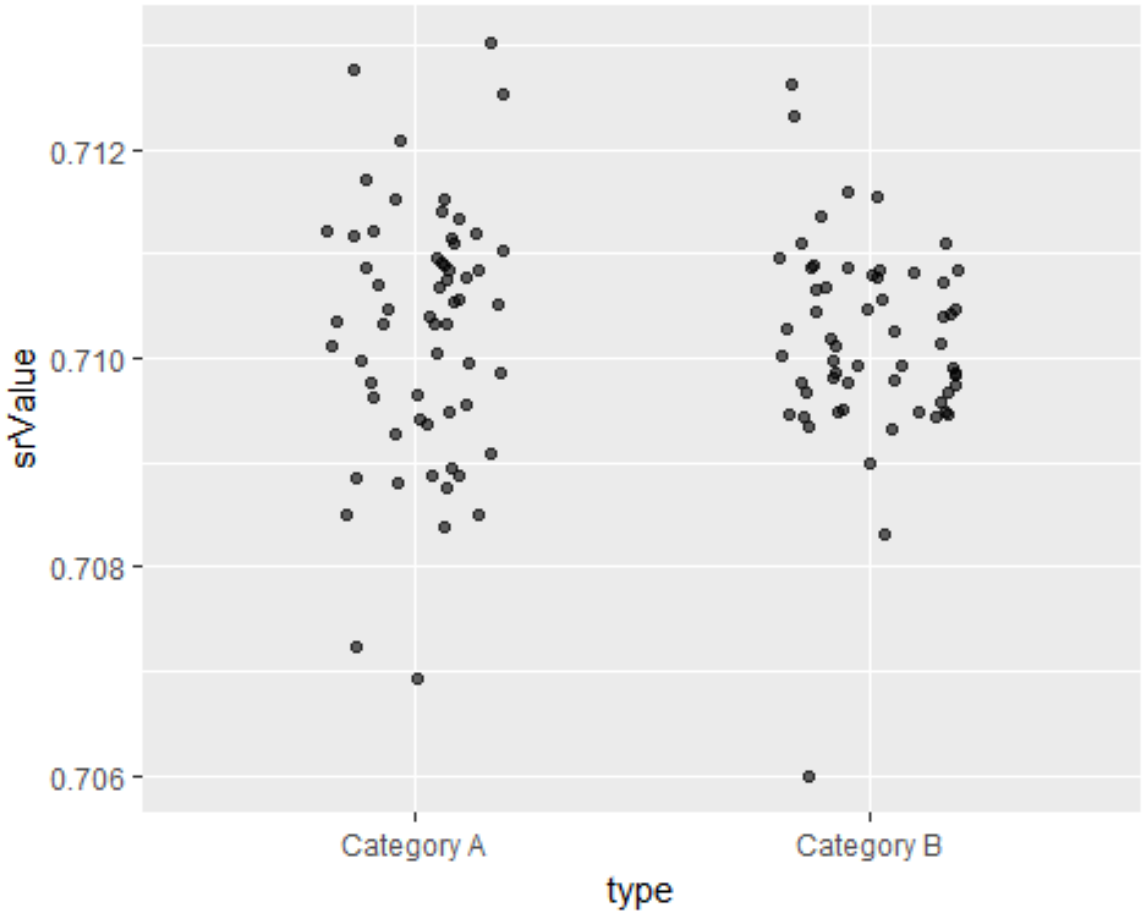

Figure 5.1. Jitter plot of $^{87}Sr/^{86}Sr$ ratios by type, Category A and Category B.

A linear model test was conducted to determine whether the type of sample, i.e. Category A or Category B, would predict the $^{87}Sr/^{86}Sr$ value. If a specific immigrant group was targeted for the postmortem investigative practices, especially dissection, which frequently resulted in Category B burials, then we should see a relationship between strontium isotope values and type (Category). There is no evidence that the type of burial can predict the strontium isotope value (p-value=0.3535). The linear model test is reproduced in Figure 5.2. In this case, a graph is not applicable because the results are not significant.

```
##
## Call:
## lm(formula = srValue ~ type, data = srdata)
##
## Residuals:
##        Min         1Q     Median         3Q        Max
## -0.0041831 -0.0006215  0.0000735  0.0006502  0.0027635
##
## Coefficients:
##                  Estimate Std. Error  t value Pr(>|t|)
## (Intercept)    0.7094650  0.0005422 1308.482   <2e-16 ***
## typeCategory A 0.0008015  0.0005600    1.431    0.155
## typeCategory B 0.0007081  0.0005603    1.264    0.209
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.001084 on 120 degrees of freedom
## Multiple R-squared:  0.01718,    Adjusted R-squared:  0.0007997
## F-statistic: 1.049 on 2 and 120 DF,  p-value: 0.3535
```

Figure 5.2. Reproduction of linear model test.

Visual Representations of the Dataset. The following histograms graphically summarize the distribution of the $^{87}Sr/^{86}Sr$ values of Category A (Figure 5.3) and Category B (Figure 5.4). If the extreme outlier value (sample 10707-3 = 0.70599) of Category B were removed from the histogram, the visual representations of these groups would appear more similar. The spread of the data is larger in Category A. The presence of outliers, both low $^{87}Sr/^{86}Sr$ values and high $^{87}Sr/^{86}Sr$ values (relative to the majority of the signatures) is noted for both categories. These outliers correspond to the signatures that do not fall within the 0.7081-0.7120 range (see Figure 5.5 for a rank order representation of the data).

Multiple modes are noted in each of the categories. Highlighting modes within strontium data is an important step toward identifying the sets of people that can in turn be grouped into populations (Burton and Price 2013). However, the arbitrary selection of bin width (the width of measurements on the x-axis) becomes a problem when using a histogram as a visual representation of the data. When the bin width is too large, modes may be hidden by an "overly

smoothed result," (Burton and Price 2013:316). Too small, and the many bins will "simply approximate the original data," (Burton and Price 2013:316).

With regard to the rank order representation of the dataset, it is common to examine the result "for a relatively flat portion on the bar graph, representing a set of people with the same ratio; i,e, a mode of the data set," (Burton and Price 2013:316). Burton and Price continue, stating, "when other data are unavailable and there is no evidence for most people being immigrants, it is parsimonious to assume that the flat plateau on such a bar graph reflects the local ratio, the local range being bracketed by slope breaks," (2013:316). However, given the extant historical documentation provided by the *Register of Burial*, death certificates, and demographic information for Milwaukee during the use life of Cemetery II (47BMI0076), sufficient evidence exists to posit that in this case, not only are most people immigrants or migrants, they are immigrants or migrants from a variety of locations. Therefore, the identification of modes or the local strontium ratio in a rank order representation of the data set is not appropriate. To uncover modes in this data set, Kernel Density Estimation is applied.

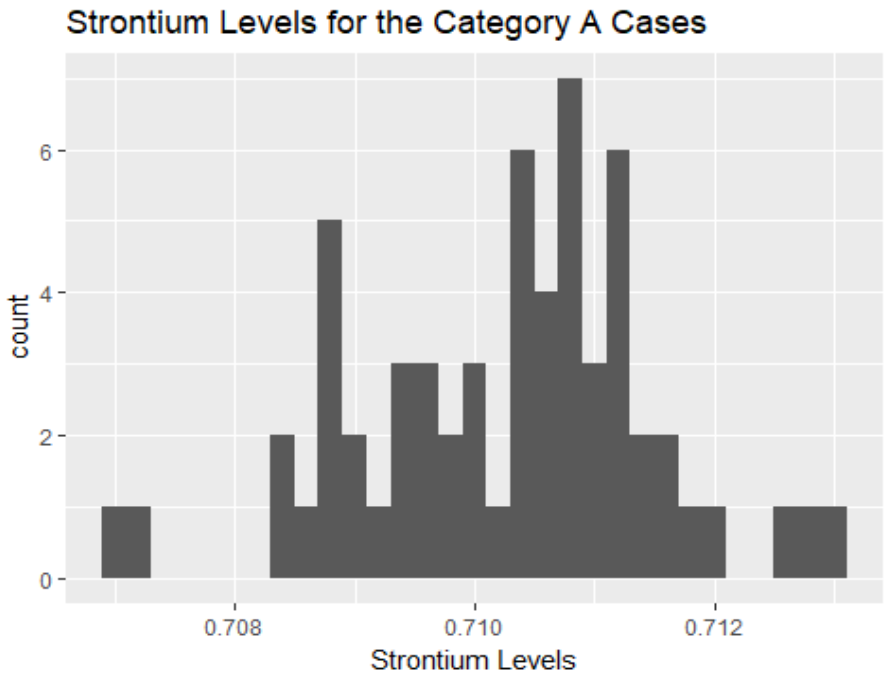

Figure 5.3. Frequency distribution of strontium isotope ratios of Category A sample set.

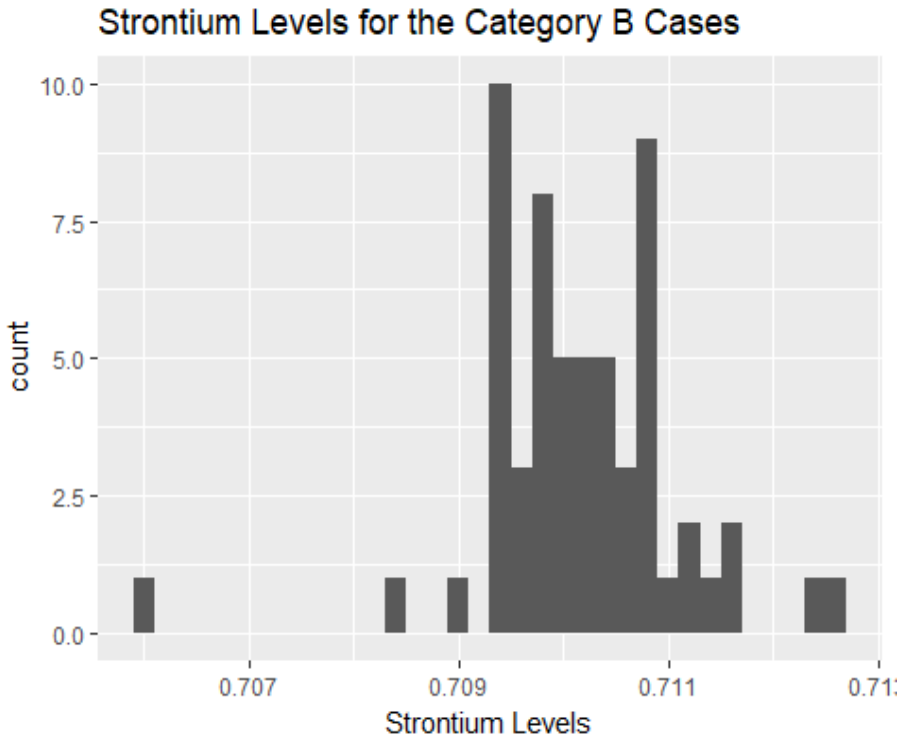

Figure 5.4. Frequency distribution of strontium isotope ratios of Category B sample set.

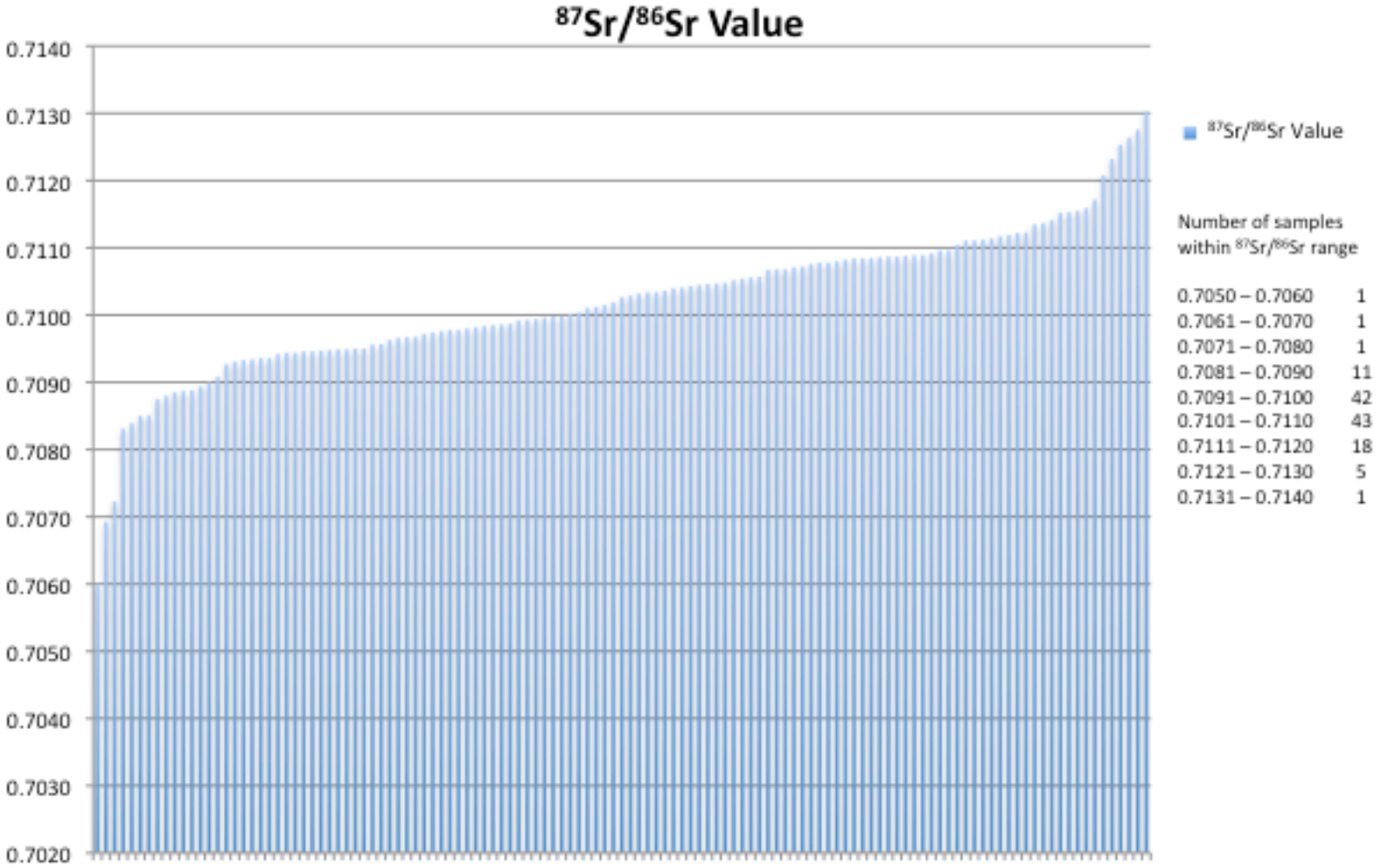

Figure 5.5. Rank order representation of dataset.

Kernel Density Estimates and Optimization Equation. Burton and Hahn suggest, "a modal approach might help resolve groups of different origins," (2016:119). Kernel Density Estimates (KDEs) are an alternative to histograms for uncovering modes in data. Per Baxter and Cool, "KDEs represent an improved approach to data presentation. Compared to the histogram the appearance is smoother and it is easier to compare more than one distribution on the same plot," (2010:2381). As a form of density plot, the Kernel Density Estimate shows distribution on the x-axis and density on the y-axis. Burton and Price describe the application of KDEs for visually representing strontium values:

> "KDE's assume that each measurement is a sample from a set with a defined probability distribution (uniform, gaussian, etc.) and a given variance. These distributions are then summed over all measurements to yield an integrated distribution... For enamel $^{87}Sr/^{86}Sr$ ratios we can posit with confidence that the distribution shape for each measurement is indeed gaussian. Because enamel samples reflect a biological average of dietary inputs, repeated samples (enamel measurements) of the same dietary isotope pool from the Central Limit Theorem, will have a normal distribution regardless of the distributions of the underlying diet ratios, if they all sample the same dietary catchment," (2013:317).

Though ratios (the univariate variable assessed in this case) have different statistical properties that would preclude a description as 'normal' data in the larger sense (i.e. a negative $^{87}Sr/^{86}Sr$ ratio is not possible), it is possible to apply a statistical model like a Kernel Density Estimate to strontium data through a technical definition of normality. As stated above, Burton and Price describe the distribution of strontium values as normal in the sense that $^{87}Sr/^{86}Sr$ ratios for an entirely local population will be normally distributed, displaying a single mode.

We know from the Shapiro-Wilk test that this project's data set is non-normally distributed. This data set could be conceived of as an overlap of "processes". Each strontium sample in this data set is from an original set, or local population. The distribution of each of these original sets, or local populations, should be gaussian, or normal. When multiple data sets

are overlapped, each representing a local population that is normally distributed on its own (as described by Burton and Price 2013), they would appear multimodal. Though the data set itself is not normal, each peak produced through the Kernel Density Estimate is. A data set derived from a cemetery population comprised of several immigrant groups should present several modes.

While Kernel Density Estimates present an advantage over histograms in that they provide a smooth presentation of data, there still exists the problem of setting the appropriate width, or bandwith, for each kernel. Like the histogram, a kernel that is too large will overly smooth and hide data; kernels that are too small will generate artificial modes (Duong 2001). Shimazaki and Shinomoto (2010) discuss using a fixed versus a variable bandwidth depending on 1) the sample size and 2) the distribution of the results. Based on the conclusion that "the fixed kernel method performed well in small samples," (Shimazaki and Shinomoto 2010:179) a fixed bandwidth was selected. The fixed bandwidth chosen for the optimized kernel density estimate was 0.0003, recalling Burton and Price, "the standard deviations for local groups are typically on the order of ±0.0003," (2013:317). Figures 5.6 and 5.7 present an overlay of the Kernel Density Estimates over the histograms to provide a visual comparison of techniques for identifying modes. Figure 5.8 illustrates the optimized Kernel Density Estimations of Categories A and B.

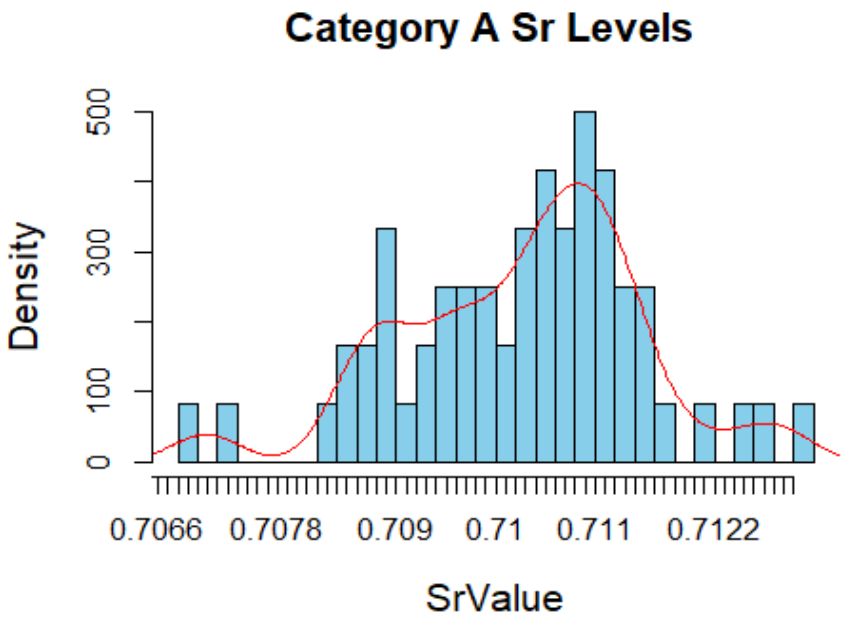

Figure 5.6. Kernel Density Estimate for Category A.

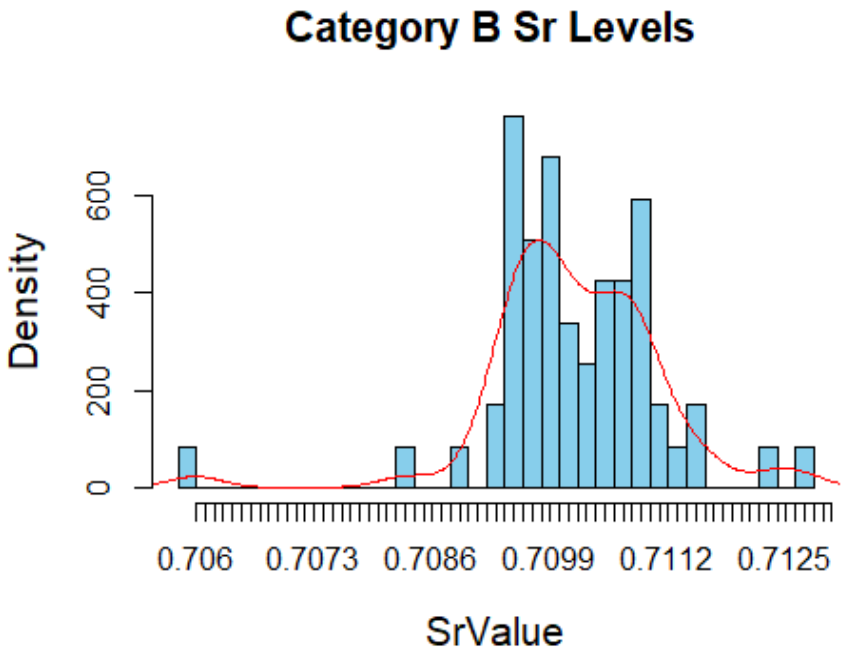

Figure 5.7. Kernel Density Estimate for Category B.

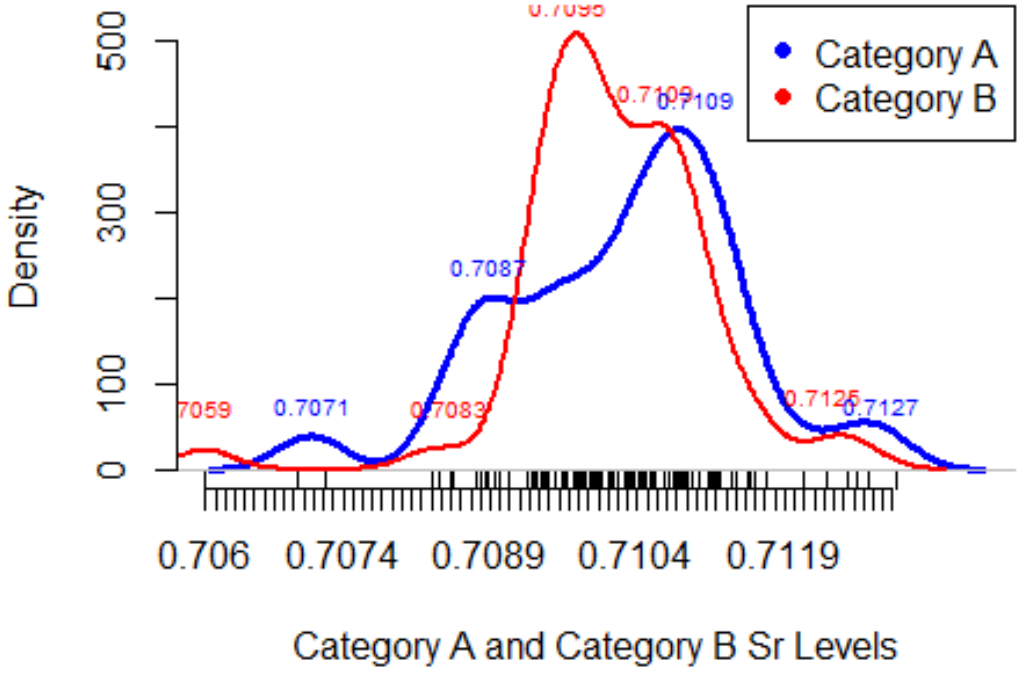

Figure 5.8. Optimized Kernel Density Estimate for Categories A and B.

In Figure 5.8, the mean $^{87}Sr/^{86}Sr$ values of each peak appear above their respective kernel. In Category B, shown in red, the first two peaks of the Kernel Density Estimate correspond to one individual, Burial Lot 10707. The first molar signature of this individual has been previously alluded to as an outlier within this data set. Given the nature of strontium isotope data, it is not surprising that there is a large overlap in the modal peaks of Category A and Category B between 0.7095 (red) and 0.7109 (red and blue) (*see* Burton and Price's reference to the sharp mode of human strontium signatures at 0.7092 (2013:312). While the modal peaks of each category are slightly different with the exception of shared mode at 0.7109, there are individuals that fall within the population peaks of their opposite group, emphasizing the similarity in signatures between the two categories overall. The population ranges within

Category B are nearly continuous, with breaks at 0.7087-0.7091, 0.7099-0.7105, and 0.7113-0.7121 (Table 5.10).

Table 5.10. Peak values of Categories A and B with associated population ranges.

Category A Peaks	Population Ranges	Category B Peaks	Population Ranges
0.7071	0.7068 to 0.7074	0.7059	0.7056 to 0.7062
0.7087	0.7084 to 0.7090	0.7083	0.7080 to 0.7086
0.7109	0.7106 to 0.7112	0.7095	0.7092 to 0.7098
0.7127	0.7124 to 0.7130	0.7109	0.7106 to 0.7112
		0.7125	0.7122 to 0.7128

A final comment should be made prior to the discussion of these results. While histograms and Kernel Density Estimates identify modes in the data, they do not "imply that any group or sample is local, but they do suggest the collective sample set is drawn from populations who had different isotope averages in their diets during early childhood," (Burton and Price 2013:318). Different dietary averages in childhood diets could imply either different diets as a whole or potentially, immigration/migration. Additionally, different isotope averages could be a reflection of maternal residential mobility (through $^{87}Sr/^{86}Sr$ input during development and lactation). In the next chapter, the local bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee County will be discussed and the samples contextualized within the identified local bioavailable $^{87}Sr/^{86}Sr$ range and available historical documentation regarding the demography of the Milwaukee County Poor Farm Cemetery burial population and Milwaukee County as a whole.

Chapter 6: Discussion of Strontium Isotope Results

Introduction

For ease of reading, internal Milwaukee County Poor Farm Cemetery Project categories and nomenclature that will be referenced in the following discussion are presented here.

All burials referenced were excavated from the Milwaukee County Poor Farm Cemetery II (47BMI0076). The term *Register* refers to the *Register of Burial of Milwaukee at County Poor Farm*, an historic, hand-written, ledger-style document that records burials that occurred between 1882 through 1974. Because the *Register* does not document all burials at Cemetery II, to date, over 250,000 death certificates, representing all death certificates filed in Milwaukee County between 1882-1925, have been examined and death certificates relevant to the Milwaukee County Poor Farm Cemetery were incorporated into a database to aid in identifications (Richards et al. 2016:26).

Terminology related to provenience will also be referenced in the discussion of putative identifications. A lot number refers to "a unique identifier assigned to an individual burial," (Richards et al. 2016:39). Additionally, with particular relevance to any discussion of the Category B sample, an explanation of the distinction between a coffin lot and a burial lot should be made. Per Richards et al.,

> "Since each coffin was mapped, the convention was to assign a 'coffin lot number' which represented the mapped location on the ground. In the instances of individual lots ('single lots'), the coffin lot number and the burial lot number are the same. In instances of 'mixed' burials, the coffin lot number and the primary individual burial lot number are the same. Primacy is defined on the basis of being placed first in the coffin. Additional burial lot numbers were assigned based on how many additional individuals of more than 50 percent completeness were recovered from the coffin. Finally, a burial lot number was also assigned to commingled human remains that could not confidently be associated with a single individual or remains that represented less than 50 percent of any one individual," (2016:60).

In this research project sample, there were three instances where the individuals sampled were not the primary individual in the coffin: Burial Lot 8199 (Coffin Lot 8180), Burial Lot 10451 (Coffin Lot 10322), and Burial Lot 10460 (Coffin Lot 10313). This is illustrated in Figure 6.1, and is the reason 29 Category B sample locations are mapped, rather than 30, as two individuals in the Category B sample, the primary individual Burial Lot 8180 and the secondary individual Burial Lot 8199, were interred in the same coffin, Coffin Lot 8180.

With regard to discussion of $^{87}Sr/^{86}Sr$ ratios, signatures will be reported to the fourth decimal place. A study by Knudson et al. validates the utility of "strontium isotope ratio measurements when made to the third and fourth decimal place for making archaeologically meaningful inferences," about mobility (2016:590). Further, Knudson et al. argue, "inferences based on differences in the fifth decimal places are not preferred due to either intra-individual variability or laboratory imprecision," (2016:595).

This chapter is organized into four primary sections. First, the development of a local bioavailable strontium isotope range for Milwaukee County is discussed. Individuals are evaluated for local or non-local status based on the local bioavailable $^{87}Sr/^{86}Sr$ range identified by this study. The results are contextualized through the application of demographic information drawn from historical documentation. Second, potential corresponding natal regions are proposed for the modal $^{87}Sr/^{86}Sr$ values identified through the optimized Kernel Density Estimates. In the third section, contributions to current understandings of the internal spatial organization of specific sections of Cemetery II (47BMI0076) are elaborated. Finally, sample lots associated with extant putative identifications are discussed. The strontium isotope values generated by this study are evaluated within the context of extant lines of evidence for these identifications. A new putative identification made as a result of this research is also discussed.

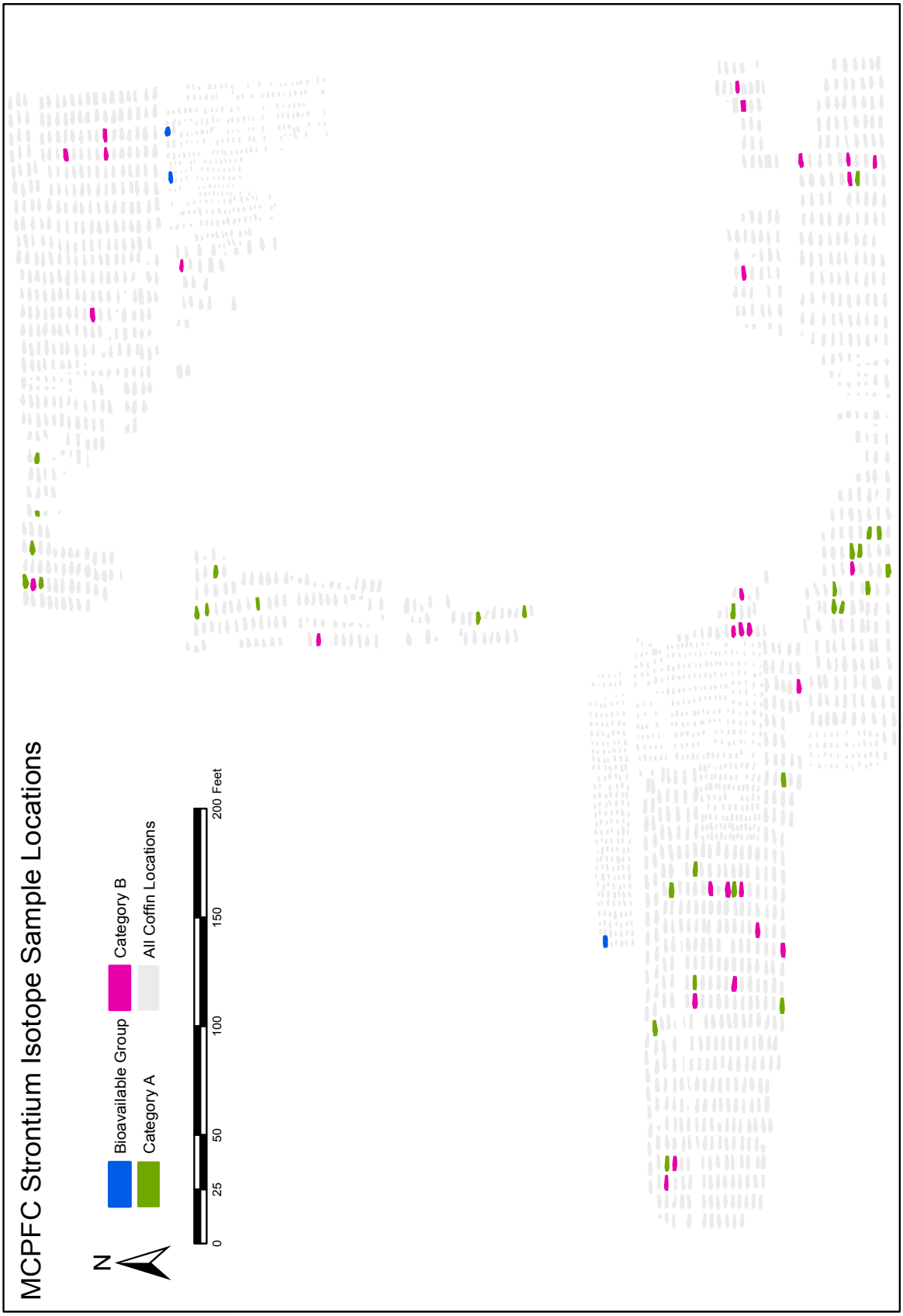

Figure 6.1. Mapped locations of all lots sampled for strontium isotope analysis.

Local Bioavailable Strontium Isotope Range

In 2015, Drew completed a documentary research project on the Rosche family. Minnie, the wife of Frank Rosche, and Frank's parents, were among the thousands of German immigrants who immigrated to Milwaukee in the second half of the nineteenth century (Drew 2015; U.S. Census Bureau 1900). Unfortunately, the Rosche's story is not a happy one. Five of the Rosche's children did not survive to adulthood (*Register of Burial of Milwaukee at County Poor Farm* 1882-1974:15). These children, Alvina, 14, Willie, 12, Rosa, 9, Louisa, 4, and Vrohne, 2, died of diphtheria within days of one another in 1894 and were interred at the Milwaukee County Poor Farm Cemetery. Cemetery II (47BMI0076) interments of individuals in the late child category are relatively infrequent. Figure 6.2 illustrates a comparison of age of individuals buried in Cemetery II according to individual documentation.

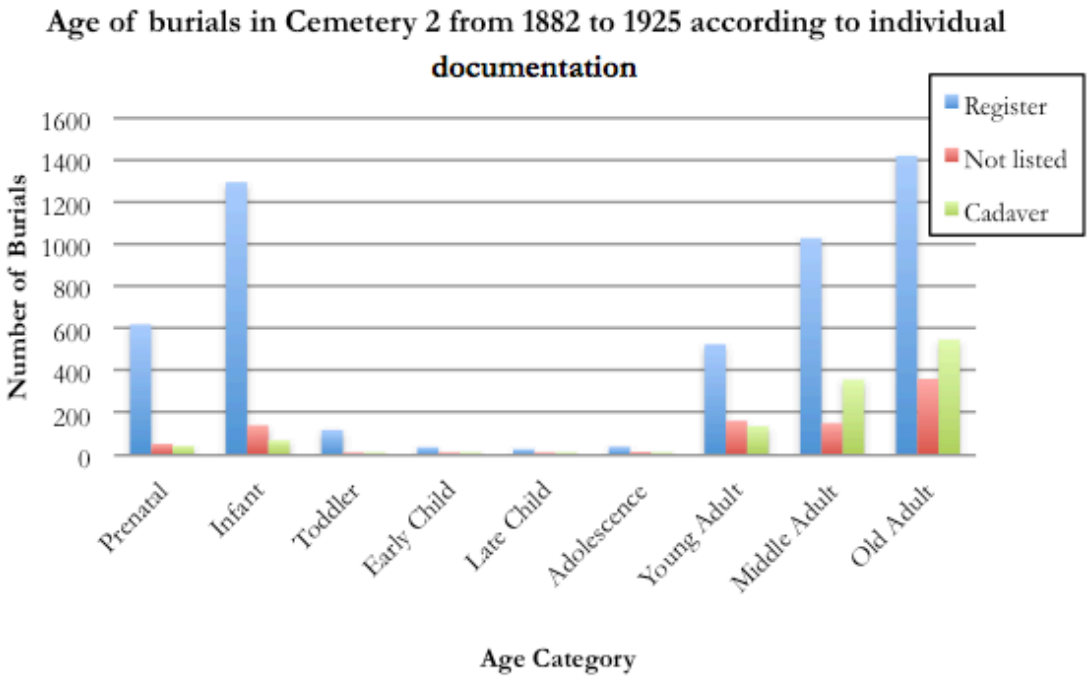

Figure 6.2. Age of burials in Cemetery II (47BMI0076) according to individual documentation. Reproduced with permission from Richards et al. 2016:28.

Per Richards et al., 39 individuals are represented in the late child category (n=35 listed in the *Register*, 4 unlisted; 2016:28). A comparison of the documentary evidence describing the in-line interment of four children, aged 12, 9, 4, and 2, with the archaeological record of all excavated burials within Cemetery II (47BMI0076) found potential matches in the northernmost section of juvenile interments. The osteological analyses of these four individuals produced age estimates consistent with the ages listed in the historical documentation. However, at 12, Willie would have been too large for the standard juvenile-sized coffins used at the cemetery. Juvenile coffin length ranges from 15 to 42 inches (Richards et al. 2016:146). As illustrated in Figure 6.2, adults and juveniles were interred in separate sections of Cemetery II (47BMI0076). An 1890 article in the *Lancet* provides the "relative stature of boys of different social classes in the 11th and 12th years", with stature ranging from 50.02 inches to 54.98 inches (Pye 1890:163).

The coffin containing the remains identified as Willie Rosche, Burial Lot 9322, measured 40 inches long. The legs of the individual interred were flexed with the feet parallel with the ossa coxae. Interestingly, the coffin dimensions for Burial Lot 9322, the burial associated with Rosa Rosche, are larger, measuring 59 inches in length. Rosa died a day later (July 1) than Willie (June 29), and it is possible that additional coffins were available by this time. This possibility is further supported by the recovery of coffin handles from Rosa's coffin and the lack of handles on Willie's coffin. If a larger coffin with handles had been available for the interment of Willie's larger (and likely heavier) body, it is reasonable to expect that this coffin would have been utilized. The remains of Alvina Rosche have not yet been identified. Alvina died on June 26th, three days prior to her siblings and at 14, it is likely that she was buried in an adult coffin and thus interred in a separate section of the cemetery from Vhrone, Louisa, Rosa, and Willie.

The Rosche children were selected to develop a more robust local bioavailable profile for the following reasons. First, at this time, they are the only identified local individuals in the Cemetery II (47BMI0076) burial population. Willie and Rosa were both born and raised in Milwaukee. Concerns regarding Willie's first permanent molar signature reflecting the migration of his mother are mitigated because Willie was not the eldest of the Rosche children (U.S. Census Bureau 1900). Second, given the knowledge gleaned from historical documentation regarding the financial resources of the Rosche family, it is reasonable to assume that Willie and Rosa were not consuming a diet composed of exotic foodstuffs that would in turn yield strontium isotope values that did not reflect local bioavailability. At the turn of the twentieth century, Frank Rosche was employed as a metal fitter, and Galena Street, the site of the Rosche home, was located in one of Milwaukee's poorer neighborhoods (U.S. Census Bureau 1900).

The interment of a dog in a coffin, Burial Lot 10508, provided another potential source for local bioavailable strontium isotope values. Per Richards et al., "The canine was recovered from the northwestern portion of the cemetery. The canine was interred in a coffin clearly designed and built for a human," (2016:92-93). This northwestern portion of Cemetery II (47BMI0076) contains juvenile burials (see Figure 6.1; Burial 10508 is highlighted in blue) and is post-1900 in date (Richards et al. 2016:77). Osteological analysis yielded the following information: the dog was male, sub-adult, and approximately one year of age (Richards et al. 2016:93). The dog was selected to aid development of a local bioavailable profile for the following reasons. First, dogs are omnivores, a dietary classification they share with humans, thus potentially providing a reasonable faunal proxy (Bentley et al. 2004; Edwards et al. 2017; Laffoon et al. 2015). Second, the dog was interred within a coffin, thus providing a faunal proxy that is contemporaneous with the human burial population, with similar preservation and soil

conditions. Lastly, given the relatively young age of the dog, it is reasonable to assume a local origin. The inclusion of faunal teeth as a proxy material for establishing a local bioavailable range is a well-documented practice in strontium isotope research (Bentley et al. 2004; Burton and Price 2013; Hedman et al. 2009; Price et al. 2007; Slater et al. 2014).

This project found that the signatures within the bioavailable group are extremely homogeneous, with a mean of 0.70946 ± 0.00018 ($1\sigma = 4$). All four signatures produced for the local bioavailable group fell within the ± 0.0003 range prescribed by Burton and Price (2013) and Burton and Hahn (2016). As previously referenced in Chapter 4, substantial baseline strontium isotope research has been conducted at the prehistoric Aztalan site, approximately 30 miles west of Milwaukee (Price et al. 2007). Price et al. generously defined the local strontium range for the Aztalan site between 0.710-0.711, with the caution that "the skeletal remains of the inhabitants…had a narrower range of isotope values (more in the middle of each zone…)," (2007:534). While similar, the bioavailable ranges produced for Aztalan and for historic Milwaukee County do not overlap.

Though the surface geology of Jefferson County (Aztalan) and Milwaukee County is generally homogeneous, there are a few important distinctions in geology and behavior that may illuminate the differences between the signatures produced for this historic site and those produced for a prehistoric site 30 miles to the west. First, while southeast Wisconsin was heavily glaciated, resulting in a largely homogeneous ground moraine, exposed Silurian and Devonian limestone bedrock along major sources of surface waters introduces the possibility that local human $^{87}Sr/^{86}Sr$ values in Milwaukee County may be influenced by the less radiogenic bedrock (Gulbranson, personal communication, 24 February 2015). Price et al. describe the geology of the Aztalan region as predominately Paleozoic sedimentary rocks, and "bedrock exposure is

quite rare… because the entire region is covered by glacial till that in places exceeds 100 m in depth," (2007:528). Second, a component of the public health movement in Milwaukee was a push toward well use rather than exploitation of polluted surface waters (Leavitt 1997). Per Dr. Eric Gulbranson, a Wisconsin Department of Natural Resources study of private and municipal wells found "for wells screened to a depth of ~ 100 to 200 feet below the surface it is expected that the water from those wells interacted with Silurian and/or Devonian dolotimized limestones that comprise the bedrock geology of the SE Wisconsin region," (personal communication, 24 February 2015). Private and municipal wells in Milwaukee County produce $^{87}Sr/^{86}Sr$ values between 0.7086-0.7091 (Gulbranson, personal communication, 24 February 2015). Well use is a relevant consideration, given that $^{87}Sr/^{86}Sr$ ratios of water adjust to "geological conditions according to the residence time below ground," (Söllner et al. 2016:131). The consumption of water with a slightly less radiogenic signature may be one explanation for why the local bioavailable range for Milwaukee County falls below that of the prehistoric Aztalan site. As more locally born individuals are identified within the Milwaukee County Poor Farm Cemetery burial population, additional signatures can be added to create a more robust bioavailable range that spans the entire temporal range of Cemetery II (47BMI0076). Corresponding adjustments to the local mean are certainly a possibility as more samples are added to the bioavailable dataset.

Figure 6.3 provides a visual representation of the relationship between each permanent molar sampled, organized by burial lot number, and $^{87}Sr/^{86}Sr$ ratios. The gray bar represents the local bioavailable $^{87}Sr/^{86}Sr$ range identified by this research project (0.7091- 0.7097) and the signatures that fall within it. Twenty-four of the remaining 119 signatures identified in this dataset fell within the local bioavailable range (in addition to the four local signatures).

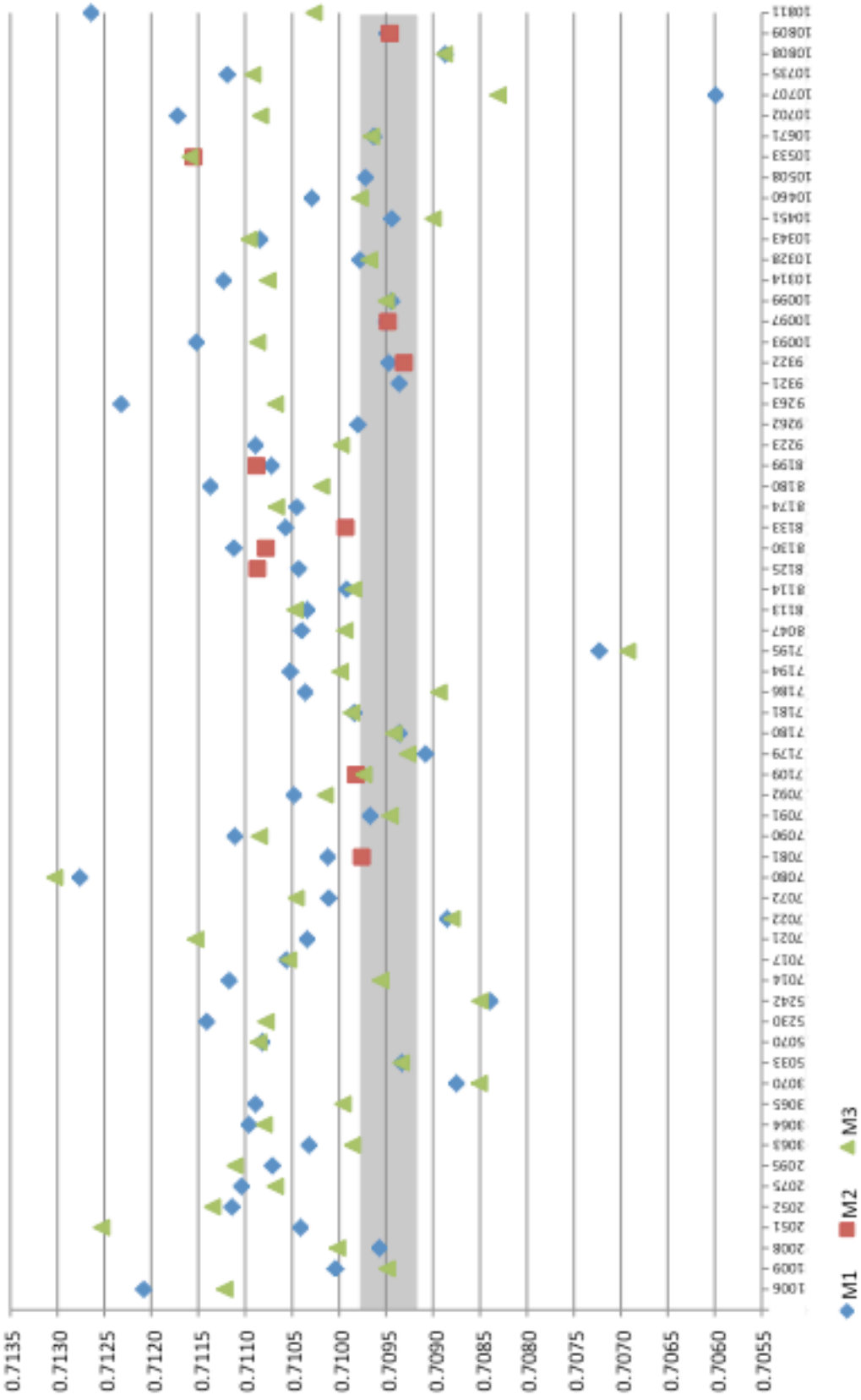

Figure 6.3. All teeth sampled for strontium isotope analysis with highlighted local bioavailable $^{87}Sr/^{86}Sr$ range.

Of these, eight individuals' first and third molar signatures fell within the local bioavailable range (n=16), three individuals' first molar signature, but not the third, fell within the local bioavailable range (n=3), and five individuals' second (n=1) or third (n=4) molars fell within the local bioavailable range. Nearly three-quarters of the signatures that fell within the local bioavailable range were from the Category B group. Only two individuals in the Category A group had both first and third molar signatures that fell within the local bioavailable range. There are several applicable comments. First, as Burton and Price demonstrate, globally, human strontium isotope signatures display a sharp mode at 0.7092 (2013:311). In other words, while a number of the signatures within this data set fall within the local bioavailable range for Milwaukee County, there also are many other locations, including European regions, which would produce similar $^{87}Sr/^{86}Sr$ signatures. Given that this is a population with a high proportion of non-local immigrants, it cannot be parsimoniously posited that all signatures that fall within the local bioavailable range represent locally born individuals. The application of information from historical documentation provides some additional clarification. Table 6.1 outlines the percent of foreign-born Milwaukee residents by nation and year according to U.S. Census data. Additional information is provided by Table 6.2, which uses data derived from historical documentation including the *Register*, death certificates, and Coroner's reports to present the country of birth for all individuals (adult and juvenile) interred at the Milwaukee County Poor Farm Cemetery between 1882 and 1910. However, individuals that were not listed in the *Register of Burial* are subsequently not included in this list. As described in Chapter 1, discrepancies exist between Milwaukee County death certificates, which provide a potential total burial population of 7,222 individuals within Cemetery II (47BMI0076), and the *Register* itself, which lists 5,363 individuals (Richards et al. 2016:26).

Table 6.1. Percent of foreign-born Milwaukee residents by country of birth 1890-1920. Reproduced with permission from Richards et al. 2016:22.

Country	1890	1900	1910	1920
Germany	27	19	17	8.7
Poland	4.5	6	—	5
Ireland	1.7	0.93	0.52	0.31
Britain	1.7	0.1	0.72	0.61
Norway	0.89	0.6	0.57	0.4
Bohemia	0.71	0.6	—	—
British America	0.61	0.66	0.5	0.45
Austria	0.45	0.57	3	1.2
Holland	0.34	—	—	—
Switzerland	0.29	0.23	0.22	—
Italy	—	0.25	0.9	0.88
Russia	—	0.4	3.2	1.6
Hungary	—	—	1.4	1
Greece	—	—	0.29	0.4
Czechoslovakia	—	—	—	0.98

Table 6.2. Natal regions (country of birth) for individuals interred at the Milwaukee County Poor Farm Cemetery, 1882-1910. Reproduced with permission from Richards et al. 2016:23.

Country	Number of Individuals	%
USA	1380	46.6
Unknown	594	20.1
Germany	582	19.6
Ireland	74	2.5
Austria/Austria-Hungary	70	2.4
Poland/"Poland Russia"	37	1.2
Canada	32	1.2
Norway	31	1
England	23	0.8
Russia/"Russia Poland"	20	0.7
Switzerland	19	0.6
Bohemia	17	0.6
Denmark	13	0.4
Sweden	12	0.4
Hungary	10	0.3
Holland	9	0.3
Scotland	8	0.3
France	5	0.2
Italy	5	0.2

Country	Number of Individuals	%
Finland	5	0.2
Wales	3	0.1
Saxony	3	0.1
Mexico	2	0.1
Macedonia	2	0.1
Prussia	1	0
Turkey	1	0
"Czecho Slovakia"	1	0
"Slavenia"	1	0
Bavaria	1	0
“Europe”	1	0
TOTAL	**2962**	100

Given that Categories A and B are comprised of adult individuals, additional clarification of Table 6.2 is necessary. Per Richards et al.:

> “Within the adult population, 20 percent (n=947) are listed as being born in the United States, while 58 percent (n=2734) were foreign born. Unfortunately the remaining 22 percent (n=1018) do not have place of birth listed. The bulk of the native population was born in the Midwest, with a number of transplants from New York State. Parental place of birth is provided on some death certificates, indicating that most native-born adults were children of German or Irish immigrants. This is consistent with the non-native adult population, who were predominately German (n=1474; 53.9%), Austrian (n=273; 10.0%), Irish (n=180; 6.6%) or Polish (n=136; 5.0%). The remainder represent small groups from places as varied as Peru, Hungary, Iceland, and Turkey,” (2016:169).

Approximately 20.1 % (n=24) of $^{87}Sr/^{86}Sr$ signatures produced for Categories A and B fall within the local bioavailable range. From the information provided above, we know that 947 adults (20%) whose interments were listed in the *Register* are described as being born in the United States (Richards et al. 216:169). If the remaining 22% of the adult burials with an unknown place of birth (or the burials completely unlisted in the *Register*, for that matter) are roughly proportional to burials with a listed place of birth, this would potentially raise the number of native-born adults to a third of the adult burial population. Though many of these individuals were born in the Midwest, we also know that Milwaukee’s population as a whole

included a large number of East Coast migrants (Richards et al. 2016:169; Gurda 2006). The greatest proportion of the non-native adult population had Germany listed as a place of birth. Strontium isotope signatures falling within the 0.7090-0.7100 range have been reported from Germany, Austria, Denmark, and Hungary (Gregoricka et al. 2014:18). Thus, while it is technically possible that the 20.1% of $^{87}Sr/^{86}Sr$ signatures that fall within the local bioavailable range represent locally-born individuals, given the history of immigration in Milwaukee and the generally greater proportion of immigrants as a whole within recorded interments, it is probable that some of the individuals that fall within the local bioavailable range identified by this research were in fact not locally born. Within this context, straightforward inferences about residential mobility (i.e. local vs. non-local) are not possible.

Kernel Density Estimates and Potential Natal Regions

Given the significant overlap of $^{87}Sr/^{86}Sr$ ratios between the primary nations of origin for the Milwaukee County Poor Farm Cemetery burial population, multiple regions of potential concordance were identified for the modal peaks produced through the Kernel Density Estimates. The $^{87}Sr/^{86}Sr$ ratios provided in the tables below have been drawn from published research utilizing human dental enamel as a sample material, as it is the best comparative proxy material to determine bioavailable $^{87}Sr/^{86}Sr$ in a given location (Burton and Price 2013:316). Natal regions with more than 30 individuals represented (equivalent to 1% of the burial population or more as identified in Table 6.2) were prioritized when examining the strontium isotope literature for $^{87}Sr/^{86}Sr$ ratios that overlapped with the modal peaks of this data set. The following tables 6.3 through 6.7 are arranged by peaks identified through the Kernel Density Estimates and include the following information: locations, sources, materials sampled, and the ranges produced for the cited studies. The outlier peak within Category B (sample 10707-3) is

discussed in the final section of this chapter. Because of variability in the size of reported $^{87}Sr/^{86}Sr$ ratio ranges in the literature, peaks of the Category A and Category B groups with overlapping ranges have been combined into a single table. Figure 6.4, illustrating the Kernel Density Estimate modes of Categories A and B, is replicated below for ease of reference.

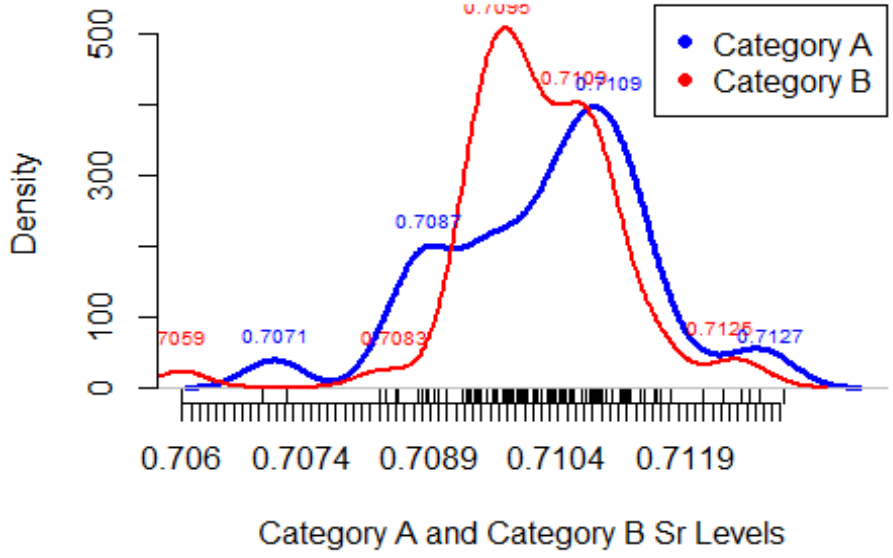

Figure 6.4. Optimized Kernel Density Estimate for Category A and Category B.

One additional consideration bears mention. While the following locations provide bioavailable $^{87}Sr/^{86}Sr$ ranges for a number of locations, these are, of course, not the only possibilities for areas with concordant $^{87}Sr/^{86}Sr$ bioavailability. Table 6.3 corresponds to the first modal peak within Category A.

Table 6.3. $^{87}Sr/^{86}Sr$ ratio range 0.7068- 0.7074.

Peak 1. Category A.	Mean: 0.7071		Range: (0.7068- 0.7074)
Location	Reference	Material	$^{87}Sr/^{86}Sr$ ratio range
Skye, Mull (Inner Hebrides), County Antrim (Northeastern Ireland)	Montgomery et al. 2003	Human enamel	<0.7078

Peak 1. Category A.	Mean: 0.7071		Range: (0.7068- 0.7074)
Location	Reference	Material	$^{87}Sr/^{86}Sr$ ratio range
Iceland (terrestrial diet; minimal marine contribution)	Price and Gestsdóttir 2006	Human enamel	0.7063- 0.7092

Table 6.4 combines the overlapping ranges of the second modal peak of Category A and the second modal peak of Category B.

Table 6.4. $^{87}Sr/^{86}Sr$ ratio range 0.7080- 0.7090.

Peak 2. Category B. Peak 2. Category A.	Mean: 0.7083 Mean: 0.7087		Range: (0.7080- 0.7086) Range: (0.7084- 0.7090)
Location	Source	Material	$^{87}Sr/^{86}Sr$ ratio range
Serbia, Romania (Danube Gorges)	Borić and Price 2013	Human enamel	0.7085- 0.7100 (reported 0.7091- 0.7096)
Western Ireland	Knudson et al. 2012	Human enamel; human bone; faunal	0.7084- 0.7106
Southern England	Evans et al. 2006	Human enamel	0.7081- 0.7089
Southern Germany	Price et al. 2004	Human enamel; human bone	0.708- 0.709
"Danube valley" (south-central Europe)	Price et al. 2004	Human enamel; human bone	0.708- 0.710
Northern Alps region of Austria	Oelze et al. 2012a	Human enamel; human bone	0.7087- 0.7100
British North America (1812)	Emery et al. 2017	Human enamel	0.7085- 0.7114

Table 6.5 corresponds to the third modal peak of Category B. This table also highlights locations that have strontium isotope signatures that are similar to the local bioavailable $^{87}Sr/^{86}Sr$ range (0.7091- 0.7097).

Table 6.5. $^{87}Sr/^{86}Sr$ ratio range 0.7092- 0.7098.

Peak 3. Category A.	Mean: 0.7095		Range: (0.7092- 0.7098)
Location	Source	Material	$^{87}Sr/^{86}Sr$ ratios range
Milwaukee County, Wisconsin	Freire 2017	Human enamel; faunal enamel	0.7091- 0.7097
Austria	Price et al. 2004	Human enamel, human bone	0.7090- 0.7100

Peak 3. Category A.		Mean: 0.7095	Range: (0.7092- 0.7098)
Location	Source	Material	$^{87}Sr/^{86}Sr$ ratios range
Serbia, Romania (Danube Gorges)	Borić and Price 2013	Human enamel	0.7085- 0.7100 (reported 0.7091- 0.7096)
Germany	Maurer et al. 2012	Human enamel	0.7090- 0.7100
Western Ireland (Southeast; Northeast Ireland)	Knudson et al. 2012	Human enamel; human bone; faunal	0.7084-0.7106 (0.7091- 0.7100)
Wales, United Kingdom	Hermer et al. 2013	Human enamel	0.7092- 0.7110
Great Hungarian Plain	Giblin et al. 2013	Human enamel	0.7093-0.7106
Eastern Bavaria; Hungary	Price et al. 2004	Human enamel; human bone	0.709-0.7100
"Danube valley" (south-central Europe)	Price et al. 2004	Human enamel; human bone	0.708-0.710
British North America (1812)	Emery et al. 2017	Human enamel	0.7085- 0.7114

Table 6.6 combines the third modal peak of Category A and the fourth modal peak of Category B. These modal peaks represent the same mean value, 0.7109.

Table 6.6. $^{87}Sr/^{86}Sr$ ratio range 0.7106- 0.7112.

Peak 4. Category B. Peak 3. Category A.		Mean: 0.7109 Mean: 0.7109	Range: (0.7106- 0.7112) Range: (0.7106- 0.7112)
Location	Source	Material	$^{87}Sr/^{86}Sr$ ratio range
Jefferson County, Wisconsin, U.S.A	Price et al. 2007	Human enamel, faunal	0.710- 0.711
Czech Republic	Price et al. 2004	Human enamel; human bone	0.7101- 0.7109
Northwest Poland	Buko et al. 2013	Human enamel	0.7099- 0.7113
Wales, United Kingdom	Hermer et al. 2013	Human enamel	0.7092- 0.7110
Bikal Region, Siberia	Haverkort et al. 2008	Human enamel	0.710- 0.715

Table 6.7 combines the overlapping ranges of the fourth modal peak of Category A and the fifth modal peak of the Category B.

Table 6.7. $^{87}Sr/^{86}Sr$ ratio range 0.7122- 0.7130.

Peak 5. Category B. Peak 4. Category A.		Mean: 0.7125 Mean: 0.7127	Range: (0.7122- 0.7128) Range: (0.7124- 0.7130)
Location	Source	Material	$^{87}Sr/^{86}Sr$ ratio range

Peak 5. Category B.		Mean: 0.7125	Range: (0.7122- 0.7128)
Peak 4. Category A.		Mean: 0.7127	Range: (0.7124- 0.7130)
Location	Source	Material	$^{87}Sr/^{86}Sr$ ratio range
Southwest Germany	Oelze et al. 2012a	Human enamel; human bone; faunal	0.7120-0.7145 (~0.7130)
Bohuslän (southeast Sweden)	Sjögren et al. 2009	Human enamel; faunal	0.711-0.714
Norway; central and Northern Sweden	Price et al. 2011	Human skeletal remains; modern and archaeological fauna	0.7128- 0.7139
Orange County, New York, U.S.	Nystrom et al. 2011	Human enamel; Archaeological fauna	0.7119- 0.7141

Spatial Insights

In the northernmost section of Cemetery II (47BMI0076) it is understood that consistent interments occurred in east-west rows. This understanding is based on multiple lines of evidence, including the recovery of four brass grave markers, the *Register*, the identification of the four individuals associated with those markers, the number of adult graves between the markers, and archaeological data that suggest consistent interments in rows (Richards 1997:116; Richards and Kastell 1993:71). Similarly comprehensive understandings of internal organization in other areas of the cemetery have been hampered by a lack of comparable evidence and historic disturbance.

However, the putative identification of Joseph Bogdanis, the result of the combined research efforts of Drew, Freire, and Richards, provides new insight into how space was being used in the southwest portion of the cemetery that was excavated in 2013. The process of making this identification is discussed in detail in the following section. Coffin Lot 10707, which contains the remains of Burial Lot 10707, now putatively identified as Joseph Bogdanis, is located two rows south and west of Coffin Lot 10620, which contains the remains of a male individual of indeterminate age. The atypical formation of this individual's "left talus and calcaneus suggested a clubbed foot," (Richards et al. 2016:1388). Drew, in her examination of death certificates, was able to putatively identify this individual osteologically (2018 in

preparation). Using a similar method of counting interments and comparing the results to the *Register*, it is now hypothesized that the adult-sized coffins were also interred in east-west rows. This is parsimonious with the interment practices observed in other sections of Cemetery II (47BMI0076), particularly the northernmost section dated to 1918-1925. Once the directionality of interments is understood in a given area of the cemetery, the likelihood of associating individual interments with *Register of Burial* entries and death certificates is vastly increased.

Following the completion of osteological analysis for the remains excavated in 1991-1992, a similar process may be possible in the southeastern section of Cemetery II using a combination of Drew's keystone identification approach (2018 in preparation), strontium isotope signatures available for five individuals in this area, and temporally sensitive coffin handle types. Additionally, pending an assessment of the remaining lots within the northernmost section of Cemetery II (47BMI0076) dated 1918 through 1925, Burial Lot 9263 may also be associated with a putative identification through a combination of material culture, osteologically visible pathology, and the $^{87}Sr/^{86}Sr$ signatures produced by this project. This will be an exciting area of future research.

Though a complete osteological analysis of the remains excavated in 1991-1992 is still underway, some initial speculation about the appearance of Category B burials within Cemetery II (47BMI0076) is possible. The burials in the section of the cemetery that was excavated in 2013 present a more complex profile across all categories. This is reflected in the research sample for this project as well; the majority of individuals that met multiple criteria for inclusion within Category B were excavated in 2013. If this section of the cemetery post-dates 1900 (Richards et al. 2016:77) and the putative identification of Joseph Bogdanis provides another date of 1908, it is possible that this section of the cemetery was in use during a volatile period in

Milwaukee's medical education system. Recall the state of the medical colleges between 1900 and 1915: the Milwaukee Medical College was censured by the American Medical Association in 1903, one of the founders and dean of the Milwaukee Medical College, Dr. W. H. Earles, died of apoplexy in 1908, the Flexner report had issued a Grade C rating for the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons, describing the two schools as "without a redeeming feature", students abandoned the Milwaukee Medical College *en masse*, and both the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons were consolidated into Marquette University by 1913 (Flexner 1910:319; Frank 1915; Marquette 1919; Simmons 1903:386). Additionally, the Bark scandal suggests that overcrowding within Cemetery II (47BMI0076) was an issue and that cremations, though legal, had not been occurring on the County Grounds prior to 1912 (*Proceedings of the Milwaukee County Board of Supervisors* 1912). It is possible that these conditions contributed to the interment behavior observed in this section of the cemetery. In a later, firmly dated section of the cemetery (1918-1925), these profound departures from decent burial all but disappear. This begs the question, why? Did consolidation into the new Medical Department of Marquette University, rated Class A by the American Medical Association in 1915, result in less contingent practices? Or are the anatomized individuals no longer represented in the same quantities within the cemetery, potentially the result of cremation as a legal method of disposition?

Individual Identifications

A discussion of each individual burial sampled for strontium isotope analysis is available in Appendix A. The following section highlights sample lots associated with extant putative identifications and two additional putative identifications made as a result of this strontium isotope research. With regard to putative identifications, that is a re-association of an individual

skeleton and their associated grave goods with a name, the author conceptualizes strontium isotope signatures as one component in a chain of evidence. Given the nature of this sample, primarily immigrants from locations with very similar bioavailable $^{87}Sr/^{86}Sr$ ranges, strontium isotope signatures alone are not sufficient to make an individual identification but can support or challenge existing evidence. Table 6.8 on the following page provides a visual aid to summarize the following narrative discussion of individual identifications and strontium isotope analysis. The second half of the table includes the nine individuals from the pilot study conducted by Freire and Jordan (2015) to illustrate the range and relative robusticity of extant evidentiary support for identifications.

During the course of the 1991-1992 excavation, four rectangular brass tags were recovered (Richards and Kastell 1993:69). These *in situ* markers correspond to descriptions of grave markers as presented in Rule 17 (i.e.: a painted and numbered headboard) and a *Milwaukee Sentinel* article from May 11, 1888 (Richards and Kastell 1993:69). When the four tags were compared to grave numbers listed in the *Register*, they corresponded to four individuals' grave numbers: Alex Nagg, Michael Sitzbeger, Silas Scott, and Unknown Man #196 (Richards and Kastell 1993:71). Using the *Register*, the identification of these four individuals, the number of adult graves in between markers, and archaeological data that suggests consistent interments in rows, Richards and Kastell were able to facilitate the identification of 190 individuals in total (Richards 1997: 116; Richards and Kastell 1993:71). With the exception of Burial Lot 10707 and the accompanying identification of Burial Lot 10881, the putative identifications of the individuals listed below are derived from this dataset. Construction activities between 1931 and 1991 resulted in disturbances to thirty-nine grave locations (Richards 1997:137). In these instances where there was ambiguity between coffin lot locations and associated death

certificates, strontium isotope analysis added an additional line of evidence to substantiate differentiation provided by osteological analyses.

Table 6.8. Visual summary of evidentiary support for individual identifications.

Burial Lot Number	Name	Concordance between $^{87}Sr/^{86}Sr$ signatures and bioavailable $^{87}Sr/^{86}Sr$ range of listed natal region from *Register* or death certificate	$^{87}Sr/^{86}Sr$ predictive model or comparable geological concordance	Biological Profile		Material Culture	Archaeological Data	Historical documentation	
				Age/Sex	Pathology			Burial tag / *Register*	Other
3063	Andreas (Andrew) Heil	•		•		◐		•	
3064	John Bucher		•	•	◐			•	
3065	Unknown #182							•	
3070	John Johnson		•	•				•	
5230	Anthony Polanis, alias Tony Polinski	•		•	◐			•	
5242	John Suhanek			•	◐			•	
10707	Joseph Bogdanis	•		•	•		•		•
	Burial Lots from pilot study (Freire and Jordan 2015)								
3055	Harry Newton		•	•				•	
3067	Gustav Neumann	•		◐				•	
5048	Gertrude West	•		•	•	•	•	•	•
5102	Vasila Abrodavich			•	◐			•	
5107	Bruno Barkovich	•		•		•		•	
5150	Ernst Gutschke	•		•	•	•		•	•
9284	Wolfgang Aschenbrenner	•		◐				•	
9289	John Zinich	•		•	◐			•	
9346	Emil Richardt	•		•				•	

Burial Lot 3063. There are two death certificate associations for excavated Burial Lots 3062 and 3063. These are the death certificates for George Kelly, age 20 (place of birth not listed) and Andreas (Andrew) Heil, age 51, (born in Hungary) respectively.

The sexually dimorphic anthroposcopic and osteometric characteristics of the individual associated with Burial Lot 3062 indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on cranial suture closure, providing a mean age of 40.25 years. The sexually dimorphic anthroposcopic characteristics of the individual associated with Burial Lot 3063 indicated a male of European ancestry. An age range of old adult was estimated for this individual based on the auricular surface and cranial suture closure, providing a mean age of 52.3 years. While differentiation of Heil and Kelly based on age would appear fairly straightforward, the estimated mean age for the remains associated with Burial Lot 3062 does not necessarily support a putative identification as George Kelly.

Neither individuals' cause of death, chronic internal hemorrhage and probable accidental drowning, respectively, would be associated with a distinguishing skeletal pathology. However, the manner and locations of their deaths might be reflected in the material culture recovered with each lot. Individuals who passed through the Coroner's Office were more likely to retain personal items, including clothing, whereas those who died at an institution, such as the Emergency Hospital in Heil's case, were more likely to be shrouded. Safety pin fragments, in locations suggestive of a shroud, were recovered with Burial Lot 3063. No material culture was recovered with Burial Lot 3062.

Ideally, both Burial Lots 3062 and 3063 would have been sampled to provide data on natal regions that would potentially differentiate these individuals. However, place of birth is not listed for Kelly; differentiation of individuals based on a combination of strontium isotope

signatures and listed natal region is not possible. Thus, the remaining option is to determine whether the $^{87}Sr/^{86}Sr$ signatures produced for Burial Lot 3063 would be consistent with a natal region of Hungary (as recorded in the *Register* in 1925).

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, the signatures produced for Burial Lot 3063 (LM^1: 0.7103; LM_3: 0.7098) are concordant with bioavailable strontium values in Hungary (see Table 6.5 above, Giblin et al. 2013). In an initial analysis of Neolithic and Copper Age populations on the Great Hungarian Plain, Giblin established a bioavailable $^{87}Sr/^{86}Sr$ range of 0.7093- 0.7103 using archaeological fauna and water samples (2009:495,496). An additional isotopic analysis performed by Giblin (2011) provides further support for concordance with Hungary. Using human and faunal enamel and bone as sample materials, Giblin found $^{87}Sr/^{86}Sr$ values of 0.7091- 0.7107 that corresponded with bioavailable ranges for the Bükk Mountains and Gutai Mountains north of the Plain (2011:184).

Burial Lot 3064. Burial Lot 3064 is associated with the death certificate for John Bucher. John Bucher, 48, died on February 15, 1925 at the County Hospital of cirrhosis of liver. The place of birth listed on his death certificate is Switzerland.

The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on cranial suture closure, providing a mean age of 48.8. No grave goods were recovered with this individual. At this time, there is no evidence to contradict this putative identification.

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, it is possible that the signatures produced for Burial Lot 3064 (LM^1: 0.7109; LM^3: 0.7108) correspond with bioavailable strontium values in Switzerland. Oelze et al., in their examination

of an Early Bronze Age acropolis near Lake Constance, produced 24 environmental samples from 11 geological units, bounded by the Swiss/German border to the south (2012b:760). These geological units are contiguous across political boundaries and offer insight into strontium bioavailability for Swiss locations. The sampling location at Pfaffenweiler produced a mean $^{87}Sr/^{86}Sr$ value of 0.71095 (± 0.00084) (Oelze et al. 2012b:768). Pfaffenweiler is located on red sandstone, *Buntsandstein* (Oelze et al. 2012b). Per McCann, "the sediments of the Buntsandstein Group crop out in the Swiss Tabular Jura and adjacent parts of France and Germany…the total thickness of the Buntsandstein Group ranges from zero in the SE to 100 m in the Basel area and some 300 m in the adjacent French and German areas," (2008:785).

Burial Lot 3065. Burial Lot 3065 is associated with the death certificate for Unknown #182. Unknown #182, 50, died on December 4, 1923 at the Milwaukee River Draw Bridge by accidental drowning.

The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis, the auricular surface, and cranial suture closure, providing a mean age of 47.2. A safety pin fragment was recovered. At this time, there is no evidence to contradict this putative identification.

There is no place of birth listed on the death certificate for Unknown #182. Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6 (RM^1: 0.7108). The $^{87}Sr/^{86}Sr$ ratio produced from the RM^3 (0.7099) falls just outside a different table, Table 6.5, suggesting a shift in this individual's dietary isotope pool in late childhood/early adolescence. Alternatively, strontium input from Unknown #182's mother may have influenced the more

radiogenic first molar signature, and the third molar signature is a closer reflection of Unknown #182's natal region.

Burial Lot 3070. There are two death certificate associations for excavated Burial Lots 3070 and 3074. These are the death certificates for John Johnson, age 38 and Geirofel Delgado, no age listed, respectively.

The sexually dimorphic anthroposcopic and osteometric characteristics of the individual associated with Burial Lot 3070 indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis, the auricular surface, and cranial suture closure, providing a mean age of 42 years. The sexually dimorphic anthroposcopic and osteometric characteristics of the individual associated with Burial Lot 3074 indicated a male of European ancestry. An age range of old adult was estimated for this individual based on the pubic symphysis, auricular surface, and cranial suture closure, providing a mean age of 52.25 years. Both individuals died at the County Hospital, of pneumonia and tuberculosis, respectively. The remains associated with Burial Lot 3074 show evidence of a probable tubercular infection that enables a reasonable differentiation between these two individuals. There were no grave goods recovered for either individual.

The association of the remains in Burial Lot 3070 with the death certificate for John Johnson has the greatest parsimony with existing evidence. The place of birth listed on the death certificate for John Johnson is Alabama. Per Emery et al. "Where bioavailable data are missing, lithic- or bedrock-age, and water-catchment (and tap water) strontium isotope maps have been modeled to fill in large geographic $^{87}Sr/^{86}Sr$ spatial gaps," (2017:324). Further, Crowley et al. state, "the local water model thus provides a readily available source of background data for predicting $^{87}Sr/^{86}Sr$ for biologically relevant materials in places where empirical data are

lacking," (2015:1). Bataille and Bowen (2012) have provided useful background data in the case of limited bioavailable $^{87}Sr/^{86}Sr$ research in Alabama. A swath of Upper Cretaceous marine formations bisects Alabama (Harrell 2016:3). Per Bataille and Bowen's local water model, predicted $^{87}Sr/^{86}Sr$ values for this area of Alabama fall between 0.707- 0.709 (2012:49). Thus, it is possible that the strontium isotope signatures produced for Burial Lot 3070 (RM^1: 0.7087; RM^3: 0.7085) are concordant with a natal region in Alabama, specifically within the area corresponding to the outcropping of Upper Cretaceous marine formations.

Burial Lot 5230. Burial Lot 5230 is associated with the death certificate for Anthony Polanis, alias Tony Polinski. Anthony Polanis, 46, died on March 25, 1924 at the Thompson Hotel of chronic tuberculosis of lungs. The place of birth listed on his death certificate is Russia.

The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on cranial suture closure, with a mean age of 51.5 years. No visible skeletal evidence of tuberculosis was noted. A biplanar craniotomy was observed. No grave goods were recovered. At this time, there is no evidence to contradict this putative identification.

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6 (RM_1: 0.7114; RM_3: 0.7107). The $^{87}Sr/^{86}Sr$ ratio produced from the RM_1 falls 0.0002 above the range outlined in Table 6.6, but still within published bioavailable ranges for Siberia (Haverkort et al. 2008). Two $^{87}Sr/^{86}Sr$ signatures produced within the Haverkort et al. study provide matching values with those produced for Burial Lot 5230 (2008:1272). The Haverkort et al. 2008 examination of the Lake Baikal region (a region encompassing the area "between 52º and 58º N and 101º and 110º E," (2008:1266)) demonstrates the wide variability of $^{87}Sr/^{86}Sr$ values within a

comparatively small area of Russia. However, it is possible that the signatures produced for Burial Lot 5230 correspond with bioavailable strontium isotope values in Russia.

Burial Lot 5242. Burial Lot 5242 is associated with the death certificate for John Suhanek. John Suhanek, 32, died on March 14, 1924 at the County Hospital of myocardial insufficiency. The place of birth listed on his death certificate is Austria.

The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface and cranial suture closure, with a mean age of 46.5 years. A severing cut to the sternum was observed. At this time, there is no evidence to contradict this putative identification.

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.4 (LM_1: 0.7083; LM_3: 0.7085). While $^{87}Sr/^{86}Sr$ values for Austria tend to be more radiogenic (Irregher et al. 2012; Price et al. 2004) than the signatures reported for Burial Lot 5242 (0.7083 and 0.7085), there are lower values, ranging from 0.70727 to 0.70977, reported by Spötl and Pak for Austria (1996). Per Oelze et al., "the northern Calcareous Alps, a relatively young limestone formation which includes the Iron Age salt mining community of Hallstatt, should also have low $^{87}Sr/^{86}Sr$ values," (2012a:416). Oelze et al. describe a subset of individuals within their research sample with "lower $^{87}Sr/^{86}Sr$ values of between 0.70725 and 0.71060" as likely "associated with geological substrates to the east and south of the Magdalenenberg, with the lowest values characteristic of younger geological units," (2012a:416). It is possible then, that the lower $^{87}Sr/^{86}Sr$ values reported for Burial Lot 5242 could be found within what would have been the political boundaries of "Austria" between 1892 through 1924.

Burial Lot 10707. Upon reviewing the mass spectrometry results, it became clear that the strontium isotope signatures produced for this individual were noticeably lower than the remainder of the sample. At the time of testing, there was no putative identification associated with this individual. Subsequently, the burial context was reviewed. Each of the individuals, Burial Lots 10707 and 10881, interred within Coffin Lot 10707 were subject to postmortem investigation. Second, age estimates for both individuals 10707 and 10881 partially fell within an age range (adolescent) that is infrequently represented in Cemetery II (47BMI0076) (see Figure 6.2 in the second section). Brooke Drew, a Ph.D. candidate working under Dr. Patricia B. Richard's direction, has compiled a comprehensive database of Milwaukee County death certificates as part of her on-going dissertation research into the historical demography of the Milwaukee County Poor Farm Cemeteries. Drew graciously shared this data and ran a database search for cadavers of adolescents buried post-1900 who died within six months of one another.

These search parameters were informed by the following information. Material culture evidence (coins) recovered from this section of Cemetery II provided the post-1900 date (Richards et al. 2016:77). Extant historical documentation that describes the seasonality of anatomy classes at the medical colleges and the preservation techniques available for cadavers at the time informed the six-month parameter (Marquette 1919; Richards et al. 2016; Richards et al. 2017). The age range of 'adolescent', an internal Milwaukee County Poor Farm Cemetery Project age category that refers to 13- 19.9 years of age, was informed by available biological profile information for the individuals in question.

The database search identified two pairs (four individuals total) of adolescent cadavers that fit the older individual/younger individual pattern of interments within Coffin Lot10707. Happily, the natal region was listed on the death certificates for each of the older two

individuals: Nebraska and Austria. This was critical, as Burial Lot 10707, included within this research project's sample set, was the older of the two anatomized adolescents interred within Coffin Lot 10707. In deciding between two potential cases of young anatomized persons with listed places of birth, Nebraska and Austria, the author determined that the $^{87}Sr/^{86}Sr$ signatures produced for Burial Lot 10707 were more consistent with a natal region in the Austro-Hungarian Empire, as it was at the time. Details of this process are described in the following paragraphs. A putative identification was produced for the sampled Burial Lot 10707 and the second individual in the coffin, Burial Lot 10881. Burial Lot 10707 is putatively identified as Joseph Bogdanis, aged 19 years, 9 months, and 8 days. Burial Lot 10881 is putatively identified as Paul Kohler, aged 18 (est). Both Joseph Bogdanis and Paul Kohler were described as laborers, and died at the County Hospital. Tuberculosis was listed as the cause of death in both cases.

Though Burial Lot 10881 was not a sample lot, the following additional information is available about Paul Kohler's interment and provides some context for the events following his death and why Coffin Lot was included within Category B. Kohler's remains were actually divided between two separate coffins, Coffin Lot 10836 and Coffin Lot 10707. As described in the 2013 Report of Investigations, "the majority of commingled lots contain bone from adults with the exception of Lot 10836, which contains, among other remains, a pair- matched set of saw-cut adolescent femora. Through analysis, these were reassociated with Lot 10881, an adolescent interred in a mixed burial," (Richards et al. 2016:221). Burial Lot 10881, Paul Kohler, was not included within this sample because Kohler was not interred with a cranium or mandible. Whether the postmortem investigative activity that occurred following the deaths of Paul Kohler and Joseph Bogdanis occurred at the County Hospital (their place of death) or elsewhere is unclear, but each new piece of information, including putative identifications,

contributes to stories that were previously obscured by the strategic forgetting of Cemetery II (47BMI0076).

The $^{87}Sr/^{86}Sr$ value (0.7059) produced from sample 10707-3 is the lowest in this research dataset. It differs from the third molar value by 0.002. This difference is illustrated in the modal peaks produced by the Kernel Density Estimate, wherein the first two modal peaks produced within Category B actually correspond to a single individual. A difference of this magnitude between signatures produced for the same individual has been suggested as potential evidence for early childhood migration (Price et al. 2004) or migration of the mother, in that 2) the first permanent molar, because of pre-natal and early life mineralization, will receive strontium input from the mother through pregnancy diet, lactation, and fetal development (Montgomery 2010). Theoretically, such a difference could also reflect a profound dietary shift in early childhood.

Lower $^{87}Sr/^{86}Sr$ values (0.703- 0.754) are predicted for "basalts and other young volcanics," (Price et al. 2004:17) in small areas of southern Germany and for the large areas in Slovakia "covered by andesites and their pyroclasts," (Price et al. 2004:16) that are predicted to share comparably low $^{87}Sr/^{86}Sr$ values. Similarly, Voerkelius et al. describe low $^{87}Sr/^{86}Sr$ values of 0.7035- 0.7070 in mineral water from "regions with basaltic volcanic rocks such as the Quaternary and Tertiary volcanic rocks of Europe," (2010:937). Voerkelius et al. found an "overall correlation between the $^{87}Sr/^{86}Sr$ of the water samples and the surface geology," (2010:987). While authors have cautioned that "rocks ≠ people" (Burton and Price 2013), it is not unreasonable to posit that local strontium isotope signatures generally fall within the range of local surface water $^{87}Sr/^{86}Sr$ values unless there are mitigating factors, including, but certainly not limited to, a diet predominately comprised of exotic (non-local) foodstuffs, exploitation of

aquifers with differing $^{87}Sr/^{86}Sr$ values, or contributions from marine salts (Maurer et al. 2012; Price and Gestsdóttir 2006).

The $^{87}Sr/^{86}Sr$ value (0.7083) produced from sample 10707-1 (RM^3) is consistent with reported signatures in south-central Europe. A discussion of less-radiogenic $^{87}Sr/^{86}Sr$ values for Austria appears above with the description for Burial Lot 5242. Further complementary evidence can be added from Price et al. 2004. As described by Price et al., "fluvial deposits of the Danube Basin" produce $^{87}Sr/^{86}Sr$ values of 0.708-0.709 (2004:32). This is consistent with available information on geologic deposits in south-central Europe (Price et al. 2004:17). Comparable geologies of "Holocene fluvial sediments," (Price et. al 2004:23) appear across political borders, in present-day Austria and Slovakia (Price et al. 2004:17). Price et al. report lower $^{87}Sr/^{86}Sr$ values (0.7088-0.7091) from the later Bell Beaker site of Henzing (also located on fluvial gravels) (2004:27).

A number of possibilities exist with respect to Joseph Bogdanis' listed natal region of Austria. His mother may have been from a dramatically different isoscape, thus accounting for the substantial difference between the $^{87}Sr/^{86}Sr$ signatures of Bogdanis' first and third permanent molars. At the time of Bogdanis' death in 1908, Slovakia was a part of the Austro-Hungarian Empire (Spiesz and Caplovic 2006). Alternatively, Bogdanis may have moved within the Austro-Hungarian Empire at a young age and subsequently identified his place of birth as Austria (Slovakia was part of the Kingdom of Hungary) to avoid complications once within the U.S. (Spiesz and Caplovic 2006). Bogdanis himself may not have been the source of information for place of birth on the death certificate. Additionally, 'Austria' may have been one recorder's shorthand for the Austro-Hungarian Empire. As illustrated by Table 6.2, there was no discernable standardization in the assignment of natal regions in the historical documentation

with respect to then current political boundaries. In this case, ambiguity in geopolitical description may be mitigated by the uniqueness of a simultaneous interment of two anatomized adolescents. The two $^{87}Sr/^{86}Sr$ signatures produced for Burial Lot 10707, 0.7059 and 0.7083, are not consistent with reported or predicted $^{87}Sr/^{86}Sr$ values for Nebraska (Bataille and Bowen 2012; Widga et al. 2017).

This case study exemplifies the utility of applying isotopic research to this historical context. Inferences concerning individuals that were interred as commingled remains or as more complete individuals within mixed burial contexts at the Milwaukee County Poor Farm Cemetery are limited by several factors, including non-recordation in the *Register*, missing elements that may diminish the ability to assess age, sex, or stature, and in many cases, a lack of personal grave goods that might contribute to an identification. Those interred with crania or mandibles are an even smaller subset of this group. However, the presence of teeth allows us to say more through the application of strontium isotope research. Potential natal regions may be identified; distinctions may be possible in instances of either/or identifications, and new information may be added to challenge or support our current understanding of the practices that appear in the archaeological record as Category B burials.

Chapter 7: Conclusion

This research is framed by Grotius' notion of a public humanity. The first part of the project's title paraphrases a sentiment expressed by the 17th century legal scholar Grotius, who, informed by the work of Seneca and Quintilian, argued that burial was a service performed for the benefit of humanity (Grotius 2012). The denial of burial was thus tantamount to an act of war (Laqueur 2015; Grotius 2012). In the context of this project, the notion of a "public humanity" is applicable in three ways: first, the legal codification of decent burial for the indigent in Wisconsin as a public humanity, second, in the "anatomization as a public humanity" argument made by members of the medical establishment, and lastly, this research project itself as a public humanity- a step "towards the recognition and inclusion denied for so long," (Richards et al. 2016:231) to those interred at the Milwaukee County Poor Farm Cemetery. If human social context and agentful action contribute to a process of materialization, wherein a transformation of ideas, stories, and values results in a physical reality, then each of the public humanities described above- decent burial of the indigent, anatomization, and strontium isotope research- can be viewed as the materialization of overlapping social aspirations (DeMarrais et al. 2004; Dobres and Robb 2000; Kristiansen 2004).

Public Humanity by the State

The first understanding of a public humanity involves the legal proscriptions created to fulfill a social contract implicit in common law. In the nineteenth and twentieth centuries, burial of the indigent by the state was codified into law and was considered a "public humanity". Potter's fields, and particularly the Milwaukee County Poor Farm Cemeteries, were a materialization of innumerable entanglements (in Hodder's (2012) sense of dependence and

dependencies), including social values, immigration/migration, resources, institutions, industrialization, and poverty.

Moore cautions against a compliance/deviance approach to understanding law in action, as it "reduces the colorful hurly-burly of social life and dynamic logic… into so arid a pair of pre-selected and pre-interpreted obedience categories, that understanding of what is actually happening on the ground may be blocked," (2000:3). Admittedly, the creation of Category A and Category B is a blunt way to analyze the idea of decent burial within the Milwaukee County Poor Farm Cemetery context. However, these categories provide a useful starting point to explore complex patterns of behavior, patterns that inform our understandings of time, norms, and context when "the right to an orderly interment in a suitable place," (Marsh 2015a:5) was not fulfilled. As Richards et al. state, "clearly, the Board of Supervisors of Milwaukee County made an effort to provide more than just a disposal facility for the sick, poor, or unnamed at the Milwaukee County Cemetery," (2016:231). However, these efforts had limits. While archaeological evidence has demonstrated that most burials within Cemetery II (47BMI0076) met the standards outlined by Rule 17 (Richards and Kastell 1993; Richards et al. 2016), this same evidence, and research conducted to contextualize archaeological findings, has shown that a concurrent process of dematerialization- of selective forgetting- occurred. The location, form, and contents of graves became part of a material strategy of forgetting Cemetery II (47BMI0076), the people interred there, and the events preceding the interments within it, particularly losses of personhood and anatomization. When the institutional standards for decent burial were not met, a range of behaviors occurred, some more *contra bonos mores* than others. A picture emerges of a spectrum of practices, consistent with the presence of various actors and institutions connected with final disposition at the Milwaukee County Poor Farm Cemetery over

time- the County Hospital, the medical colleges, the Coroner's Office, the county-contracted undertakers, and more.

To return to the first conception of a public humanity, that of the right to a decent burial, it may be helpful to examine legal enforcement of statutory translations of common law. What were, precisely, the penalties in Wisconsin for failing to provide a decent burial for human remains, anatomized or otherwise? In a word, none. The Anatomy Act included no punishment or fine for failure to comply with proscriptions for decent burial, though it did for failing to produce a corpse for dissection in the first place. State statutes outlining procedures for poor relief were equally silent on the matter of enforcement. While the rules enacted by the Milwaukee County Board of Supervisors provided more definition for the burial- related responsibilities of the Supervisor of the County Farm, a safeguard to ensure the fulfillment of the public humanity outlined in state statute was lacking. Surely, a supervisor might lose his job for failing to fulfill his duties, and the minutes of the Milwaukee County Board of Supervisors attest to investigations over the years dealing with theft, mismanagement, drunkenness, and fraud (Avella 1987:211). However, the seeming resilience of many individuals, including Undertaker Charles Judson, Superintendant of the County Farm Ferdinand Bark (Anthony 2016), and Drs. Burgess, Earles, and Sifton, each at one time involved with scandals related to the Milwaukee County Poor Farm Cemetery, might suggest that second acts are possible, particularly if your public misdeeds involve the pauper dead. This is consistent with a point raised by Moore. "Many pressures to conform to 'the law' probably emanate from the several social milieus in which an individual participates. The potentiality of state action is far less immediate than other pressures and inducements," (2000:65). Though the specter of state action was lacking, this research found, based on the excavations completed in 1991-1992 and 2013, many of the recovered

burials at the Milwaukee County Poor Farm Cemetery satisfied basic requirements of decency as defined by Milwaukee County's Rule 17. It is evident that some pressures or inducements existed to provide a decent burial for the indigent, institutionalized, and unidentified. That said, the presence of interments that more closely resemble disposal than burial illustrates Moore's point: "the making of rules and social and symbolic order is a human industry matched only by the manipulation, circumvention, remaking, replacing, and unmaking of rules and symbols in which people seem almost equally engaged," (2000:1).

A Medical Public Humanity

One of the primary arguments of the medical community in favor of a legal avenue to obtain bodies for anatomical learning was that anatomization and the creation of a better-educated generation of doctors would benefit society as a whole, thus providing "a public humanity". This is the logic that informed Smith's "Use of the Dead to the Living", the passage of Anatomy Act legislation, and dovetails with one of Marsh's seven fundamental principles of the law of human remains, "the interests of the dead shall not trump the needs of the living," (2015a:4). The need for properly educated, trained medical professionals outweighed the objections of the poor, the individuals most at risk of anatomization and disturbed interments.

This research has explored the context of a specific moment in time that in turn speaks to the foundations of medical education and practice in the Midwestern United States. The laws and statutes that comprise the Wisconsin Anatomy Acts made the aftermath of legalized dissection and anatomization an explicit and legislatively defined event. Without the excavation projects at the Milwaukee County Poor Farm Cemetery, a ground truth that challenged idealized procedures as identified in law, a critical understanding and elaboration of how this process worked in the past would be absent. Within the Milwaukee County Poor Farm Cemetery narrative,

archaeologists are not the only actors to contest the "truth" and memory of the past. The archaeological recovery of the dead that had been deliberately forgotten with ephemeral grave markers, hidden under parking lots, obscured through a lack of documentation, and denied through repeated construction disturbances reestablished the presence of these individuals and importantly, their capacity to interact with the living. To put a twist on the quote from Matthew, in this case, it is agency "you will always have with you". As exceptional dead, the burial population of the Milwaukee County Poor Farm Cemetery have effective political agency and participate in memory creation activities through their very presence, particularly the dead whose interments were not recorded in the *Register*, their dissected bodies testifying to an erasure of personhood and the form of their burials to the aftermath of exploitative practices that disproportionately affected the poor and socially marginalized.

However, any notion that exploitive relationships between the body and the law no longer exist or are an historic artifact is simply incorrect. The "presumed consent" laws incorporated into state statutes throughout the United States today are a legacy of the Anatomy Acts. While organ procurement for donation and transplant is the stated goal of presumed consent laws, "the focus is more directly on society's need for organs and less on preserving individual or family control," (Madoff 2010:31). Like the Anatomy Acts, these provisions apply to bodies subject to examination or investigation by coroners and medical examiners. Rather than delivering unclaimed bodies to medical colleges, here, body parts may be donated for transplant unless the individual or their family has refused or provided a contrary indication. However, there is no obligation on the part of the coroner to inquire, and in practice, this has resulted in limited investigation of true intent and liability relieved by ignorance (Madoff 2010:31).

One of the more egregious cases of abuse of presumed consent laws occurred in California, wherein the Los Angeles Coroner's Office had made more than a million dollars in profit from the sale of corneas to an eye bank (Madoff 2010:32). More than 80% of the decedents were people of color, and the vast majority of their families were unaware that organs had been harvested and sold (Madoff 2010:32). Michelle Goodwin describes the "rising death tolls of young Blacks and Latinos and the promulgation of presumed consent laws" as a "tragic coincidence," (2006:121). Whether organs harvested for sale or bodies contributing to the success of medical colleges, the pattern is similar- profiting from death that largely excludes the communities most at risk of a particular practice of legal exploitation through marginalization.

As recently as October 2016, the New York Times ran a story about 22 "borrowed" bodies still stranded in cold storage, three years after having been "lent" to the Albert Einstein College of Medicine for use as cadavers (Bernstein 2016b:A1). The case of the 22 corpses "underscores broader, more enduring problems with the city's mortuary system, particularly its recurring failure to contact relatives before bodies are dispatched to mass graves on Hart Island, the city's potter's field," (Bernstein 2016b:A1). While in this case, the use of unclaimed bodies as anatomical cadavers without consent of the next of kin is prohibited by law, at issue is how an individual becomes "unclaimed" in the first place (Bernstein 2016b:A1). Bernstein describes additional investigations into Hart Island interments that revealed: individuals "entitled to private graves" mistakenly buried in mass graves; lawsuits, lost bodies, switched toe tags, and cover-ups; "veterans entitled to a military burial, people with money for their own funeral, and even one subject of a police missing-person report," (2016b:A1). Bernstein describes repeated attempts on the part of reporters to witness Hart Island burials firsthand, and, after failing to secure permission from city officials, resorting to using drones to record burials on video

(2016b:A1). Hart Island, in continuous operation since 1869, is a modern day potter's field with ongoing issues strikingly similar to those of its historic contemporaries. The Hart Island example shows that financial stress, erasure, abandonment, and consolidation are still occurring in an active potter's field today.

The variety of disposal practices post-dissection seen in the Milwaukee County Poor Farm Cemetery data underscore that this was a contingent human enterprise. The complex profile across all categories of burial in the section of Cemetery II (47BMI0076) excavated in 2013 may be a reflection of the disorder and stress within Milwaukee's medical education community in the early 1900s.

The pattern of isotopic signatures revealed in the strontium research is parsimonious with and lends additional evidentiary support to extant suppositions about the behavior of the medical establishment regarding dissection and subsequent Category B burials. Specific immigrant groups were not targeted for dissection, rather, the relative scarcity of anatomical material was such that any bodies that would suit (i.e. were not decomposed) were used. However, though specific immigrant groups were not targeted for dissection, immigrants without resources for private burial, without kin, and/or without strong community ties were more likely to become unclaimed and thus faced a greater risk of anatomization. This research has the benefit of illuminating the experiences of the societally vulnerable in death, builds connections between past and present practices, and demonstrates, to quote Faulkner, that "the past is never dead. It's not even past," (1951:92).

A Public Humanity and the Milwaukee County Poor Farm Cemetery Project

Law is a process (Moore 2000), and where recourse to address violations of the social contract of decent burial was lacking in the past, present day legislation has provided a partial

remedy. The Wisconsin State Statute 157.70 prevented further destruction of Cemetery II (47BMI0076) in 1991 and required responsible archaeological recovery of human remains. The resulting data from archaeological excavation provided a more nuanced understanding of laws in practice over time and incomparable information about the experiences of those interred. Further, in permitting curation as final disposition, a means to identify individuals exists, both through standard osteological analysis and destructive testing techniques, like strontium isotope analysis.

The destructive testing component of sampling human enamel to produce isotopic signatures could arguably be described as a further anatomization of individuals. For a variety of reasons including historic anatomization and disturbance, it is not possible to re-associate names with individuals without the addition of new data, like the information on natal regions that is produced through isotopic testing. Critically, in contrast to the materialization of the past, this research is a memory building activity. Geochemical data, when highly contextualized with skeletal, archaeological, and documentary data provides sufficient evidentiary support to substantively discuss the effects of structural inequality and power on human bodies, recovering untold and forgotten stories.

Given that generating otherwise inaccessible, direct information about residential mobility (i.e. natal region(s)) was the justification for materializing individuals' molars through isotopic analysis, it is imperative to discuss the contributions of this project to that end and directions for future research using this dataset. This dissertation investigated the application of strontium isotope analysis to a specific historic cemetery context. Several conclusions emerged. To begin, within this context, strontium isotope analysis alone is not enough to provide insight into natal regions with any degree of specificity. Both the burial population itself, predominately European immigrants and Yankee migrants from isotopically similar areas, and the

idiosyncracies of historical recordation, such as Poland, "Poland Russia", Russia, and "Russia Poland", compromise the effectiveness of strontium isotope analysis. A "lesson learned" and clear area of future research is the additional application of oxygen isotope analysis. The recent study of casualties from the War of 1812 by Emery et al. (2017) provides an excellent example. Because the individuals involved were from areas that were formerly part of a contiguous landmass, the only way to provide some degree of separation between the British or American soldiers interred in a mass grave was to apply oxygen isotope analysis. It is this researcher's opinion that the addition of oxygen isotope ratios to the existing dataset of $^{87}Sr/^{86}Sr$ ratios is not only a logical next step, but necessary for meaningful hypotheses of natal regions, especially for areas lacking comparative human $^{87}Sr/^{86}Sr$ data. Importantly, this work may be undertaken without further destructive testing, as the enamel sampled for strontium isotope analysis is simultaneously ready for oxygen isotope analysis following the 2.363% NaOCl and acetic acid steps described in Chapter 4.

The above discussion is not to say that strontium isotope analysis is not a powerful analytical technique. Within the context of available historical documentation, the application of strontium isotope analysis was appropriate to answer the question of differential postmortem treatment based on region of origin. However, the utility of strontium isotope ratios on their own to answer the question "who is this person?", a component of the second research goal of this project, is variable. The robusticity of the answer is limited by the availability of and concordance with additional lines of evidence, an important consideration for any archaeological research project utilizing this type of geochemical analysis. One contribution of this dissertation is to affirm that strontium isotope analysis within historical contexts has value, but that its value

is greatly enhanced with a "buddy"- historical documents or oxygen isotope analysis, and preferably, both.

The addition of oxygen isotope data may also support inferences of locality (i.e. locally born vs. non-local). This project began the process of constructing a local bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee County. A logical next step is to create an historic food web, utilizing documentary evidence to examine what foods (and importantly, from where) went into a human diet during this time period. Given the close relationship between the county institutions and the cemeteries, it is possible to create a generalized picture of diet, using reports to the Milwaukee County Board of Supervisors from the various county institutions that detail grocer contracts, menus, foods grown at the Poor Farm, the amount and type of food assistance available through outdoor relief, etc. Development of the local bioavailable strontium isotope range will be an ongoing process and current interpretations of locality will necessarily be reevaluated as the sample for local bioavailability becomes more robust.

Finally, an examination of maternal inheritance is a clear area of future research, as this creates additional, and within the Milwaukee County Poor Farm Cemetery context, frequently inaccessible information about an individual. While some death certificates list the names and places of birth for the deceased's parents, many do not. Because strontium isotope analysis is a mechanism to reconstruct the residential biography of an individual and, if the first permanent molar was sampled, their mother, both provenience and provenance can be discussed (Joyce 2012; *see also* the subject biography application implied by Zipkin et al. 2017). For all but two cases, a first molar $^{87}Sr/^{86}Sr$ signature is available. This potentially allows us to discuss generations of immigration, recognizing and recovering stories and experiences that may not be visible in the historical record (Zuckerman et al. 2014:514).

This is a hopeful story, not a defeatist one. Some might argue that the probability of success for a project of this nature is minimal, given the history of disturbance, discrepancies in the *Register*, relative lack of variation in strontium isotope ratios within the sample population, and the general difficulty of undertaking strontium isotope research in historic contexts. This research produced new data about the 62 individuals sampled. Informed by a combination of historical documentation and $^{87}Sr/^{86}Sr$ ratios, potential natal regions were proposed for each person. In eight cases, this research helped strengthen preexisting evidentiary ties between individuals and their names, complementing the previous nine identifications supported by strontium isotope data in the pilot study (Freire and Jordan 2015), thus challenging the 'quixotic' appellation for historical strontium research. The most dramatic success was the identification of two individuals interred in a mixed burial, Joseph Bogdanis and Paul Kohler, made possible through collaborative research and the availability and interpretation of $^{87}Sr/^{86}Sr$ data. Finally, the data produced by this project helped us understand the spatial organization of an area within Cemetery II (47BMI0076) when incorporated into a multi-evidentiary matrix.

Recall Laqueur's statement on the erasure of the pauper dead, which "made the body's last claim on public notice… as it moved toward the grave more emotionally exigent, more poignant, more important to the poor and dispossessed. The possibilities of social death increased," (2015:313). Those interred at the Milwaukee County Poor Farm Cemetery were deprived of their last claim on public notice in a variety of forms: in missing names, both of the unknown and unrecorded dead, in the erasure and forgetting following the final burial in Cemetery II (47BMI0076), in the continuous episodes of construction disturbance, both historic and contemporary, and in the form of the daily traffic traversing over the approximately 800 individuals that remain in place under present day Doyne Avenue (Richards et al. 2016:3). If a

proper burial was considered the last claim on public notice, then the lack of notice in the past surely demands our attention in the present. This work is a reclamation of public notice. It is a bioarchaeology of social engagement (Zuckerman et al. 2014)- an attempt through research to reverse the anonymity and neglect that has characterized the history of this cemetery and those interred within it.

An acute awareness of ethical responsibility must go hand in hand with the exhaustion of scientific possibility. Even when the limits of new knowledge are reached, our obligation to continue this narrative only increases. If we imagine that the loss of individuality and marginalization are merely morality tales of the past, rather than ongoing conversations, it will be to all our detriment.

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Appendix A: Burial Descriptions of Sampled Lots

In the following descriptions, the category "Coffin Lot Material Culture" does not include associated coffin hardware. Coffin hardware is discussed in Richards (1997) and Richards et al. (2016).

Burial Lot: 1006
Coffin Lot: 1006
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft had been disturbed by prior construction. The west end of the burial appears to be partially disturbed by previous construction at the site. The coffin was fairly preserved with a partially intact coffin lid and small sections of the walls and base intact. The west coffin wall was removed by prior construction activities. The individual was supine and extended with head to the west. The left arm was crossed over the pelvis and the right arm was at the side. Elements were recovered in situ. One bone shirt stud was recovered from the west end of the coffin near the left shoulder and two gold cuff links with stone inlay were recovered from the center of the coffin near the forearms.
Coffin Lot Material Culture: One bone shirt stud and 2 gold cuff links were recovered.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. All elements were recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface. Stature was not observable for this individual.

The right maxillary I^2, C, PM^{1-2}, and left maxillary PM^{1-2}, M^1, and M^3 were present. Loose maxillary teeth were recovered. The right mandibular I_{1-2}, C, PM_{1-2}, M_{1-3}, and left mandibular I_{1-2}, PM_2, and M_{1-3} were present. Loose mandibular teeth were recovered. Extra cusps were observed on the left and right maxillary M^1.

Osteolytic pits were observed in the thoracic and lumbar vertebrae. Schmorl's nodes were present in the cervical vertebrae.
Identification: There is no putative identification associated with Burial Lot 1006 at this time.
Strontium isotope ratios: 1006-30: 0.71208; 1006-32: 0.71122
The $^{87}Sr/^{86}Sr$ ratio identified for the RM_3 falls within Table 6.6. The $^{87}Sr/^{86}Sr$ ratio identified for the RM_1 falls within the 0.001 gap between Tables 6.6 and 6.7. Of the ranges provided in Chapter 6, the $^{87}Sr/^{86}Sr$ range proposed by Haverkort et al. (2008) for the Lake Baikal region of Siberia could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is possible that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0008) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 1006 is included within Category A.

Burial Lot: 1009
Coffin Lot: 1009
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was fairly preserved with large sections of the walls

intact. The individual was supine and extended with head to the west. The right arm was crossed over the torso and the left arm was folded with the hand toward the shoulder. Elements were recovered in situ.
Coffin Lot Material Culture: One copper safety pin was recovered.
Osteological Description: Adult. The remains were in good condition with light fragmentation. The left foot was not recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis and auricular surface. Stature was estimated to be 70.00 ± 2.5 inches.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The right mandibular M_{1-3} and left mandibular M_{1-3} were present. Loose mandibular teeth were recovered.

An osteolytic pit was observed in the T7 vertebra. Osteophytic lipping was observed on the right humerus and right os coxae. Periostitis was visible on the right and left tibiae. An exostosis was observed on the left fibula. Schmorl's nodes were present in the thoracic and lumbar vertebrae.
Identification: There is no putative identification associated with Burial Lot 1009 at this time.
Strontium isotope ratios: 1009-30: 0.71004; 1009-32: 0.70949
The $^{87}Sr/^{86}Sr$ ratios identified for this individual partially fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012), Maurer et al. (2013), and Price et al. (2004) for British North America, the Great Hungarian Plain, Wales, Western Ireland, Germany, and Austria/Eastern Bavaria/"Danube Valley", respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. It should be noted that the signature identified for the RM_3 falls within the identified bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee. Burial Lot 1009 is included within Category A.

Burial Lot: 2008
Coffin Lot: 2008
Associated Lot: 2125
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The burial appears to have been disturbed by previous construction at the site. The coffin was poorly preserved with small sections of the north wall intact. Lot 2008 represents the primary individual from this burial and is associated with Lot 2125. The individual was supine, extended, and oriented from west to east. The arms were at the sides. Elements were recovered in situ. A metal pin was recovered from the center of the burial, three inches below the pelvis.
Coffin Lot Material Culture: One metal pin was recovered.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was represented only by fragments of the left zygomatic, parietals, temporals, and occipital. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a female of European ancestry. An age range of young adult was estimated for this individual based on the pubic symphysis. Stature was estimated to be 68.00 ± 2.3 inches.

The right maxillary PM^1 and M^1 were present. Loose maxillary teeth were recovered. The right mandibular I_2, M_{1-2}, and left mandibular M_{1-2} were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed.

Osteophytic lipping was observed on the ribs, vertebrae, and sacrum. Periostitis was visible on the thoracic vertebrae. Schmorl's nodes were present in the thoracic vertebrae. Cut marks to the C7, T2, and L5 vertebrae, and the sacrum were observed. Severing cuts to the laminae of vertebrae T1 through L5 were observed.
Identification: There is no putative identification associated with Burial Lot 2008 at this time.
Strontium isotope ratios: 2008-19: 0.70957, 2008-32: 0.71002
The $^{87}Sr/^{86}Sr$ ratios identified for this individual partially fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012), Maurer et al. (2013), and Price et al. (2004) for British North America, the Great Hungarian Plain, Wales, Western Ireland, Germany, and Austria/Eastern Bavaria/"Danube Valley", respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Though the LM_1 signature falls within the identified bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee, the RM_3 does not. Burial Lot 2008 is included within Category B.

Burial Lot: 2051
Coffin Lot: 2051
Associated Lot: 2090
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin was fairly preserved with large sections of the walls and base intact. Lot 2051 represents the primary individual from this burial and is associated with Lot 2090. The individual was supine and extended with head to the west. The arms were to the sides. The legs appear to have shifted due to taphonomic processes. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of African ancestry. An age range of middle adult was estimated for this individual based on the auricular surface and cranial suture closure. Stature was estimated to be 67.32 ± 4.0 inches.

The right maxillary C, M^{2-3}, and left maxillary I^2, C, and PM^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular PM_{1-2}, M_{1-3}, and left mandibular C, PM_{1-2}, and M_{1-3} were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed.

Porotic hyperostosis was observed on the frontal and parietal bones of the cranium. Osteolytic pits were observed in the left clavicle and right foot. Osteophytic lipping was observed on the vertebrae and sacrum. An osteoma was observed on the right parietal of the cranium. Periostitis was visible on the fibulae. A healed fracture to the right fibula was observed. Perimortem fractures to the tibiae, right foot, and left fibula were observed. Severing cuts to the tibiae and fibulae were observed.
Identification: There is no putative identification associated with Burial Lot 2051 at this time.
Strontium isotope ratios: 2051-19: 0.71041, 2051-17: 0.71253
The $^{87}Sr/^{86}Sr$ ratio identified for the LM_3 falls within Table 6.7. The $^{87}Sr/^{86}Sr$ ratio identified for the LM_1 falls within the 0.0008 gap between Tables 6.5 and 6.6. Of the ranges provided in Chapter 6, the $^{87}Sr/^{86}Sr$ range proposed by Haverkort et al. (2008) for the Lake Baikal region of Siberia could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is more

likely that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0021) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 2051 is included within Category A.

Burial Lot: 2052
Coffin Lot: 2052
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The individual was supine and extended with the head to the west. The right arm was crossed over the pelvis with the right hand above the left hand. The left arm was at the side. The left leg was crossed over the right leg at the ankles. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis and the auricular surface. Stature was estimated to be 67.28 ± 2.5 inches.

The right maxillary PM^{1-2}, M^{1-2}, and left maxillary PM^{1-2}, and M^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular M_{2-3} and left mandibular M_2 were present.

Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed. Osteophytic lipping was observed on the ribs and in the feet. Schmorl's nodes were present in the thoracic vertebrae.
Identification: There is no putative identification associated with Burial Lot 2052 at this time.
Strontium isotope ratios: 2052-14: 0.71114, 2052-16: 71135
The $^{87}Sr/^{86}Sr$ ratio identified for the RM^3 falls 0.0001 above the upper $^{87}Sr/^{86}Sr$ value for the range outlined in Table 6.6, but still within $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Haverkort et al. (2008), and Sjögren et al. (2009) for Northwest Poland, Southeast Sweden, and the Baikal region of Siberia, respectively. Burial Lot 2052 is included within Category A.

Burial Lot: 2075
Associated Lot: 2075
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin was well preserved with large sections of the walls and base intact. The individual was supine and extended with head to the west. Elements were recovered in situ. Leather fragments were recovered from the western end of the coffin near the cranium.
Coffin Lot Material Culture: Leather fragments were recovered. A steel wire tightener and scrap iron pieces were recovered from the western end of the coffin near the cranium.
Osteological Description: Adult. The remains were in good condition with light fragmentation. The sternum was not recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface. Stature was estimated to be 65.89 ± 2.5 inches.

The right maxillary I^2, C, PM^{1-2}, M^1, M^3, and left maxillary PM^{1-2}, and M^{1-3} were present.

Loose maxillary teeth were recovered. The right mandibular I_{1-2}, C, PM_{1-2}, M_{1-3}, and left mandibular C, PM_1, and M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

Osteolytic pits were observed in the right hand, right foot, left tibia, and left foot. Os acromiale was observed in the left scapula. Periostitis was visible on the left foot. A healed amputation at the second left metatarsal was observed.

Identification: There is no putative identification associated with Burial Lot 2075 at this time.

Strontium isotope ratios: 2075-14: 0.71104, 2075-16: 0.71068

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 2075 is included within Category A.

Burial Lot: 2095

Coffin Lot: 2095

Associated Lot: None

Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The individual was supine and extended with head to the west. Elements were recovered in situ.

Coffin Lot Material Culture: None.

Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis, the auricular surface, and cranial suture closure. Stature was estimated to be 67.11 ± 2.5 inches.

The right maxillary I^1, C, PM^1, M^{1-2}, and left maxillary I^1, PM^{1-2}, and M^3 were present. Loose maxillary teeth were recovered. The right mandibular PM_2, M_1, M_3, and left mandibular I_{1-2}, C, and PM_{1-2} were present. Loose mandibular teeth were recovered.

Ankylosis was observed between the C2 and C3 vertebrae. Osteophytic lipping was observed on the right ribs, clavicles, left scapula, vertebrae, ossa coxae, right foot, and left femur. Exostoses were observed on the right ulna, ossa coxae, right femur, right tibia, and right fibula. Schmorl's nodes were present in the thoracic vertebrae. A perimortem trauma was observed at the right parietal. The observed perimortem trauma was a circular hole in the right parietal with interior beveling, but this hole was too small to be identified as a gunshot wound.

Identification: There is no putative identification associated with Burial Lot 2095 at this time.

Strontium isotope ratios: 2095-14: 0.71071, 2095-1: 0.71111

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 2095 is included within Category A.

Burial Lot: 3063

Coffin Lot: 3063

Associated Lot: None

Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The 370N 40W datum was located within the east half of the coffin. The individual was supine and extended with head to the west. The arms were crossed over the pelvis. Elements were recovered in situ. Safety pins were recovered near the left eye orbit, near the cervical vertebrae, and the distal thoracic cavity.
Coffin Lot Material Culture: Safety pin fragments were recovered.
Osteological Description: Adult. The remains were in poor condition with heavy fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on the auricular surface and cranial suture closure. Stature was not observable for this individual.

The right maxillary PM^{1-2} and M^{1-3} were present. Loose maxillary teeth were recovered. The right mandibular M_2 and left mandibular PM_2 and M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed. Three fillings were observed.

Osteophytic lipping was observed on the left scapula and vertebrae. Periostitis was visible on the left radius, tibiae, and fibulae. Schmorl's nodes were present in the thoracic vertebrae.
Identification: This individual has been putatively identified as Andreas (Andrew) Heil.
Strontium isotope ratios: 3063-14: 0.71032, 3063-17: 0.70986
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 3063 appears in Chapter 6. Burial Lot 3063 is included within Category A.

Burial Lot: 3064
Coffin Lot: 3064
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. No grave shaft was visible. The burial was partially disturbed during mechanical stripping. The individual was supine and extended with head to the west. Most remains were recovered in situ; the left radius, ulna, and right foot were recovered from disturbed fill.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. The right os coxae, right tibia, right fibula, and left foot were not recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on cranial suture closure. Stature was estimated to be 69.97 ± 2.8 inches.

The left maxillary PM^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular PM_2, M_1, and left mandibular PM_2, and M_3 were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed. A pipe notch was observed.

The L1 vertebra had collapsed. Eburnation was observed in the right hand. Degeneration of the right clavicle and right scapula was observed. Osteophytic lipping was observed on the ribs, vertebrae, radii, ulnae, right hand, and left os coxae. A pseudojoint was observed between the right radius and right ulna and between the left radius and left ulna. Periostitis was visible on the right foot, left tibia, and left fibula. Exostoses were observed on the right scapula, left humerus, and femora. Schmorl's nodes were present in the thoracic vertebrae. A healed fracture

to the left ulna was observed. Excessive reactive bone growth was observed on the right radius and left humerus. Severing cuts to the left femur, left tibia, and two sectioning cuts to the left fibula were observed.
Identification: This individual has been putatively identified as John Bucher.
Strontium isotope ratios: 3064-14: 0.71096; 3064-17: 0.71080
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 3064 appears in Chapter 6. Burial Lot 3064 is included within Category B.

Burial Lot: 3065
Coffin Lot: 3065
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. A grave marker post was located two feet from the western extent of the coffin outline. The individual was supine and extended with head to the west. Elements were recovered in situ.
Coffin Lot Material Culture: Safety pin fragments were recovered.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis, the auricular surface, and cranial suture closure. Stature was estimated to be 65.87 ± 2.8 inches.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. No mandibular teeth were present. Periodontitis was observed.

Spina bifida was observed in the sacral vertebrae. Degeneration of the right and left acromioclavicular joints was observed. Osteophytic lipping was observed on the sternum, scapulae, vertebrae, and sacrum. A pseudojoint was observed between the right os coxae and sacrum. Periostitis was visible on the right tibia. Exostoses were observed in the feet. Schmorl's nodes were present in the thoracic vertebrae.
Identification: This individual has been putatively identified as Unknown #182.
Strontium isotope ratios: 3065-3: 0.71089, 3065-1: 0.70996
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 3065 appears in Chapter 6. Burial Lot 3065 is included within Category A.

Burial Lot: 3070
Coffin Lot: 3070
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The individual was supine and extended with head to the west. Elements were recovered in situ. Chemical erosion was observed on the left fibula.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based

on the pubic symphysis, the auricular surface, and cranial suture closure. Stature was estimated to be 67.97 ± 2.8 inches.

The right maxillary PM^{1-2}, M^{1-3}, and left maxillary C, PM^{1}, and M^{2-3} were present. Loose maxillary teeth were recovered. The right mandibular M_{2-3} and left mandibular M_{1-2} were present. Loose mandibular teeth were recovered. Carious lesions were observed. Fourteen fillings were observed. A gold filling was present in the right I^{1}.

Osteolytic activity was observed in the left humerus. Osteophytic lipping was observed on the cervical vertebrae and left foot. Schmorl's nodes were present in the thoracic vertebrae.
Identification: This individual has been putatively identified as John Johnson.
Strontium isotope ratios: 3070-3: 0.70875, 3070-1: 0.70851
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 3070 appears in Chapter 6. Burial Lot 3070 is included within Category A.

Burial Lot: 5033
Coffin Lot: 5033
Associated Lot: 5183
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The grave contains the multiple burial of Lots 5033 and 5183. Lot 5033 represents the primary individual from this burial and was interred below the remains of Lot 5183. The individual was supine and extended with head to the west. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface and cranial suture closure. Stature was estimated to be 66.89 ± 2.5 inches.

The right maxillary PM^{2} and M^{1-3} were present. Loose maxillary teeth were recovered. The right mandibular M_{1-3} and left mandibular M_{1-3} were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed.

The right talus had collapsed. Eburnation of the distal right radius, right hand, left hand, and right foot was observed. Degeneration of the cervical and lumbar vertebrae joints, right hand, proximal left humerus, distal left ulna, left hand, sacrum, and distal right tibia was observed. Osteophytic lipping was observed on the scapulae, vertebrae, radii, ulnae, hands, left os coxae, sacrum, femora, tibiae, and feet. An osteoma was observed on the frontal of the cranium. Periostitis was visible on the right radius, ulnae, ossa coxae, tibiae, fibulae, right foot, and left femur. Exostoses were observed on the right femur, right tibia, and in the left foot. Healed fractures to a right rib, the right humerus, right hand, right tibia, and left foot were observed. Excessive reactive bone growth was observed on the right humerus, right tibia, right fibula, and feet. The right distal tibia was remodeled.
Identification: There is no putative identification associated with Burial Lot 5033 at this time.
Strontium isotope ratios: 5033-19: 0.70933, 5033-17: 0.70934
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 5033 is included within Category B.

Burial Lot: 5077
Coffin Lot: 5077
Associated Lot: 5081
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The grave contains the multiple burial of Lots 5077 and 5081. Lot 5077 represents the primary individual from this burial and was interred below the remains of Lot 5081. The individual was supine and extended with head to the west. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on the auricular surface. Stature was estimated to be 72.51 ± 2.8 inches.

The right maxillary C, PM^{1-2}, M^{1-3}, and left maxillary I^2, C, PM^2, and M^{1-3} were present. Loose maxillary teeth were recovered. The right mandibular C, PM_{1-2}, M_{1-3}, and left mandibular C, PM_{1-2}, and M_{2-3} were present. Loose mandibular teeth were recovered. Calculus, carious lesions, periodontitis, and enamel hypoplasia were observed.

Cribra orbitalia was visible in the right and left orbits. Degeneration of the cervical vertebrae and distal right os coxae was observed. Osteophytic lipping was observed on the scapulae, vertebrae, humeri, radii, right hand, and ossa coxae. Periostitis was visible on the left os coxae, tibiae, and fibulae. Exostoses were observed on the radii and ulnae. Healed fractures to the nasal bones and left talus were observed. Excessive reactive bone growth was observed on the left talus.
Identification: There is no putative identification associated with Burial Lot 5077 at this time.
Strontium isotope ratios: 5077-30: 0.71082, 5077-32: 0.71066
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 5077 is included within Category B.

Burial Lot: 5230
Coffin Lot: 5230
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The east end of the burial was truncated by a trench. The individual was supine and extended with head to the west. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. The sternum was not recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on cranial suture closure. Stature was not observable for this individual.

The right maxillary PM^{1-2}, M^{1-3}, and left maxillary PM^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular M_{1-3} and left mandibular M_{1-2} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

Ankylosis was observed in the left and right sacroiliac joints. Osteophytic lipping was

observed on in the cervical vertebra. Periostitis was visible on the tibiae. Exostoses were observed on the ulnae. A healed fracture to the right femur was observed. Excessive reactive bone growth was observed on the right femur. A biplanar craniotomy was observed.
Identification: This individual has been putatively identified as Anthony Polanis, alias Tony Polinski.
Strontium isotope ratios: 5230-30: 0.71141, 5230-32: 0.71078
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 5230 appears in Chapter 6. Burial Lot 5230 is included within Category A.

Burial Lot: 5242
Coffin Lot: 5242
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The burial appears to have been disturbed by previous construction at the site. Water was present in the coffin. The individual was supine and extended with head to the west. Elements were recovered in situ. Newspaper was recovered from the left ribs.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with light fragmentation. The sternum, right hand, both legs, and both feet were not recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface and cranial suture closure. Stature was not observable for this individual.

The right maxillary M^{1-3} and left maxillary M^{1} were present. Loose maxillary teeth were recovered. The right mandibular PM_2 and M_{1-3} and left mandibular M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

An endocranial lesion was observed on the left parietal. An osteolytic pit was observed in the thoracic vertebrae. Osteophytic lipping was observed on the clavicles, scapulae, vertebrae, humeri, left ulna, ossa coxae, and sacrum. An exostosis was observed on the right os coxae. Schmorl's nodes were present in the thoracic vertebrae. A healed fracture to the maxilla was observed. A severing cut to the sternum was observed.
Identification: This individual has been putatively identified as John Suhanek.
Strontium isotope ratios: 5242-19: 0.70839, 5242-17: 0.70850
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 5242 appears in Chapter 6. Burial Lot 5242 is included within Category A.

Burial Lot: 7014
Coffin Lot: 7014
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin was fairly preserved with large sections of the walls and base intact. The individual was supine and extended with head to the west. The arms were crossed over the torso. Elements were recovered in situ. Adherent textile was observed on the ribs, right distal radius, left os coxae, and sacrum. A crucifix was recovered from the right hand. A holy water bottle with

cork was recovered from the right elbow. A prayer book, toothbrush, enema syringe, and pencil were recovered beneath the left arm. Two types of buttons were recovered: shell buttons from the chest area and metal buttons from the pelvis area.
Coffin Lot Material Culture: Three two-holed shell buttons, 9 metal buttons, and cloth were recovered. A wood and metal crucifix, glass holy water bottle with stopper, a prayer book, a wooden toothbrush with no bristles, enema syringe, and a pencil with an eraser were also recovered. Hat pin as described in Richards 1997 burial description is a pencil with an eraser.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based the auricular surface and cranial suture closure. Stature was estimated to be 67.02 ± 2.8 inches.

The right maxillary M^1 and left maxillary M^1 were present. Loose maxillary teeth were recovered. The right mandibular PM_2, M_{1-3}, and left mandibular PM_{1-2}, M_1 were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and enamel hypoplasia were observed.

An irregular formation of the right shoulder was observed. Eburnation was observed in the right hand. Degeneration was observed in the right hand. Osteophytic lipping was observed on the hands. Periostitis was visible on the left femur. Exostoses were observed on the right scapula and right fibula. Schmorl's nodes were present in the thoracic vertebrae. A healed fracture to the left radius was observed. A healed amputation of three left metacarpals was observed.
Identification: There is no putative identification associated with Burial Lot 7014 at this time.
Strontium isotope ratios: 7014-30: 0.71117, 7014-32: 0.70956
The $^{87}Sr/^{86}Sr$ ratio identified for the RM_3 falls within Table 6.5. The $^{87}Sr/^{86}Sr$ ratio identified for the RM_1 falls within Table 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017) and Hermer et al. (2013) for British North America and Wales, respectively, could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is more likely that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0016) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. It should be noted that the signature identified for the RM_3 falls within the identified bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee. Burial Lot 7014 is included within Category A.

Burial Lot: 7017
Coffin Lot: 7017
Associated Lot: None
Burial Description: The burial was located when the cranium was disturbed during mechanical stripping. No grave shaft was visible. The burial was partially disturbed during mechanical stripping. The coffin was poorly preserved with only nails intact. The individual was supine and extended with head to the west. The arms were to the sides with hands over the proximal femora. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with heavy fragmentation. The sternum was not recovered. The cranium was represented only by fragments of the right temporal and occipital. The sexually dimorphic anthroposcopic and osteometric characteristics of

this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based the auricular surface. Stature was estimated to be 71.13 ± 2.8 inches.

No maxillary teeth were present. The right mandibular C, PM_{1-2}, M_{2-3}, and left mandibular M_1, and M_3 were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed. A pipe notch was observed.

Periostitis was visible on the tibiae and fibulae. Exostoses were observed on the left ulna and in the right foot. Healed fractures to a rib, the right clavicle, right fibula, and left foot were observed. Excessive reactive bone growth was observed on the left foot.

Identification: There is no putative identification associated with Burial Lot 7017 at this time.

Strontium isotope ratios: 7017-19: 0.71056, 7017-17: 0.71054

The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 7017 is included within Category A.

Burial Lot: 7021

Coffin Lot: 7021

Associated Lot: None

Burial Description: The burial was located through mechanical stripping. The grave shaft was indistinct. The coffin was fairly preserved with large sections of the walls and base intact. The burial was located just south of the water line disturbance. The individual was supine and extended with head to the west. The right arm was over the pelvis. The left arm was originally crossed over the pelvis based on the position of the left hand but had shifted due to taphonomic processes. Elements were recovered in situ.

Coffin Lot Material Culture: None.

Osteological Description: Adult. The remains were in fair condition with heavy fragmentation. The sternum and sacrum were not recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of indeterminate adult was estimated for this individual. Areas of element fusion were assessed to confirm the individual fell into the adult age category. Stature was estimated to be 66.7 ± 2.8 inches.

The right maxillary M^2 and left maxillary C were present. Loose maxillary teeth were recovered. The right mandibular C and PM_{1-2} were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and peridontitis were observed. One filling was observed.

Ankylosis was observed between two thoracic vertebrae. Eburnation of the distal humeri, proximal radii, and distal femora was observed. Osteophytic lipping was observed on the humeri, radii, ulnae, right hand, right os coxae, femora, tibiae, and feet. Periostitis was visible on the tibiae.

Identification: There is no putative identification associated with Burial Lot 7021 at this time.

Strontium isotope ratios: 7021-14: 0.71034, 7021-16: 0.71153

The $^{87}Sr/^{86}Sr$ ratio identified for the RM^1 falls within Table 6.6. The $^{87}Sr/^{86}Sr$ ratio identified for the RM^3 falls within the 0.001 gap between Tables 6.6 and 6.7. The $^{87}Sr/^{86}Sr$ ranges proposed by

Buko et al. (2013), Emery et al. (2017) and Haverkort et al. (2008) for Northwest Poland, British North America, and the Lake Baikal region of Siberia, respectively, could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is more likely that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0012) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 7021 is included within Category A.

Burial Lot: 7022
Coffin Lot: 7022
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. The grave shaft was indistinct. The coffin was fairly preserved with large sections of the walls and base intact. The individual was supine and extended with head to the west. The right arm was to the side and the left arm was originally crossed over the pelvis based on the position of the left hand but had shifted due to taphonomic processes. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based the pubic symphysis and the auricular surface. Stature was estimated to be 64.55 ± 2.5 inches.

The right maxillary PM^{1-2}, and left maxillary PM^{1-2}, and M^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular I_1 C, PM_{1-2}, M_{1-2}, and left mandibular C, PM_{1-2}, and M_{2-3} were present. Loose mandibular teeth were recovered. Calculus, carious lesions and enamel hypoplasia were observed.

Osteophytic lipping was observed on the ribs. Schmorl's nodes were present in the thoracic vertebrae. A biplanar craniotomy was observed.
Identification: There is no putative identification associated with Burial Lot 7022 at this time.
Strontium isotope ratios: 7022-30: 0.70885, 7022-17: 0.70880
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.4. Burial Lot 7022 is included within Category A.

Burial Lot: 7072
Coffin Lot: 7072
Associated Lot: 7147
Burial Description: The burial was located through mechanical stripping. The grave shaft was indistinct. The coffin was poorly preserved with small sections of the walls and base intact. The grave contains the multiple burial of Lots 7022 and 7147. Lot 7022 represents the primary individual from this burial and was interred below the remains of Lot 7147. The individual was supine and extended with head to the west. The left arm was crossed over the pelvis. The remains were raked up on to the northwest corner of the coffin and rested on the right os coxae. Elements were recovered in situ.
Coffin Lot Material Culture: None.

Osteological Description: Adult. The remains were in poor condition with heavy fragmentation. The right arm, right hand, right leg, right foot, left leg, and left foot were not present. The cranium was partially fragmented. The sexually dimorphic anthroposcopic characteristics of this individual indicated a probable female of European ancestry. An age range of young adult was estimated for this individual based the auricular surface. Stature was not observable for this individual.

The right maxillary PM^1 was present. Loose maxillary teeth were recovered. The right mandibular PM_1 was present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

An exocranial lesion was observed on the frontal bone. An endocranial lesion was observed on the frontal bone. A planar craniotomy was observed. Severing cuts to the glabella and mandible were observed.

Identification: There is no putative identification associated with Burial Lot 7072 at this time.

Strontium isotope ratios: 7072-2: 0.71011, 7072-1: 0.71046

The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 7072 is included within Category B.

Burial Lot: 7080

Coffin Lot: 7080

Associated Lot: None

Burial Description: The burial was located through mechanical stripping. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the walls and base intact. The individual was supine and extended with head to the west. The arms were crossed over the pelvis. Elements were recovered in situ.

Coffin Lot Material Culture: None.

Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. All elements were recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic characteristics of this individual indicated a male of European ancestry. An age range of young adult was estimated for this individual based on the auricular surface. Stature was not observable for this individual.

The right maxillary M^{2-3} and left maxillary PM^1 were present. Loose maxillary teeth were recovered. The right mandibular PM_1, M_{1-2}, and left mandibular M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed. Three fillings were observed.

No pathology was observed.

Identification: There is no putative identification associated with Burial Lot 7080 at this time.

Strontium isotope ratios: 7080-19: 0.71276, 7080-17: 0.71303

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.7. Burial Lot 7080 is included within Category A.

Burial Lot: 7081
Coffin Lot: 7081
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was well preserved with large sections of the walls and base intact. Water was present in the coffin. The individual was supine and extended with head to the west. Elements were recovered by hand from below water level. Organic tissue (brain) was recovered.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. The sternum was not recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on cranial suture closure. Stature was not observable for this individual.

No maxillary teeth were present. The right mandibular M_{1-2} and left mandibular PM_1 were present. Loose mandibular teeth were recovered. Carious lesions and enamel hypoplasia were observed.

An osteolytic pit was observed in the left foot. Osteophytic lipping was observed on the vertebrae and left os coxae. Schmorl's nodes were present in the thoracic and lumbar vertebrae. A healed fracture to the mandible was observed.
Identification: There is no putative identification associated with Burial Lot 7081 at this time.
Strontium isotope ratios: 7081-30: 0.71012, 7081-31: 0.70976
The $^{87}Sr/^{86}Sr$ ratios identified for this individual partially fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. It should be noted that the signature identified for the RM_2 falls within the identified bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee. Burial Lot 7081 is included within Category A.

Burial Lot: 7090
Coffin Lot: 7090
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the walls and base intact. The individual was supine and extended with head to the west. The arms were crossed over the pelvis. Elements were recovered in situ. The shell and metal button was recovered near the hands.
Coffin Lot Material Culture: One shell and metal button and one metal button.
Osteological Description: Adult. The remains were in fair condition with heavy fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a female of European ancestry. An age range of middle adult was estimated for this individual based on cranial suture closure. Stature was not observable for this individual.

The right maxillary C, PM^2, M^1, and left maxillary I^2, C, PM^{1-2}, and M^1 were present.

Loose maxillary teeth were recovered. The right mandibular M_1 and left mandibular M_1 were present. Loose mandibular teeth were recovered. Calculus, carious lesions, peridontitis, and enamel hypoplasia were observed.

Incomplete fusion was observed on the atlas vertebra. Osteophytic lipping was observed on the scapulae and ossa coxae. A planar craniotomy was observed. Cut marks to the right and left parietals were observed. Two pieces of metal were observed inserted vertically into each of the superior cuts in the parietal portions of the calotte.

Identification: There is no putative identification associated with Burial Lot 7090 at this time.

Strontium isotope ratios: 7090-19: 0.71111, 7090-17: 0.71085

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 7090 is included within Category B.

Burial Lot: 7091

Coffin Lot: 7091

Associated Lot: None

Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin was poorly preserved with small sections of the walls and base intact. The individual was supine and extended with head to the west. The right arm was to the side. Elements were recovered in situ. Adherent wood was observed on the right distal radius.

Coffin Lot Material Culture: Unidentified metal fragments were recovered.

Osteological Description: Adult. The remains were in poor condition with heavy fragmentation. The sternum and sacrum were not recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic characteristics of this individual indicated an individual of ambiguous sex and European ancestry. An age range of indeterminate adult was estimated for this individual. Areas of element fusion were assessed to confirm the individual fell into the adult age category. Stature was not observable for this individual.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The right mandibular PM_1 was present. Loose mandibular teeth were recovered. Calculus, carious lesions, and peridontitis were observed.

Osteophytic lipping was observed on the right hand. A planar craniotomy was observed. Cut marks to the right and left parietals were observed. Embedded metal was observed in each of the vertical cuts in the calotte and in the most inferior cut on the left parietal just above the squamosal suture.

Identification: There is no putative identification associated with Burial Lot 7091 at this time.

Strontium isotope ratios: 7091-14: 0.70967, 7091-1: 0.70946

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 7091 is included within Category B.

Burial Lot: 7092

Coffin Lot: 7092

Associated Lot: None

Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the walls and base intact. The north coffin wall was partially decomposed. The individual was supine and extended with head to the west. The arms were crossed over the pelvis. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of young adult was estimated for this individual based on the pubic symphysis and the auricular surface. Stature was not observable for this individual.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The left mandibular $M_{2\text{-}3}$ were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and peridontitis were observed.

Osteophytic lipping was observed on the left scapula, vertebrae, humeri, radii, and ulnae. Periostitis was visible on the ulnae and right fibula. Exostoses were observed on the humeri. Schmorl's nodes were present in the thoracic and lumbar vertebrae. A planar craniotomy was observed. Vertical cut marks to the frontal and right and left parietals were observed. Embedded metal was observed in the cut inferior frontal bone of the calotte.
Identification: There is no putative identification associated with Burial Lot 7092 at this time.
Strontium isotope ratios: 7092-14: 0.71048, 7092-16: 0.71015
The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 7092 is included within Category B.

Burial Lot: 7109
Coffin Lot: 7109
Associated Lot: 7146
Burial Description: The burial was located through mechanical stripping. The grave shaft was indistinct. The coffin was fairly preserved with large sections of the walls and base intact. Kerf lines were visible on the north and south interior walls. The grave contains the multiple burial of Lots 7109 and 7146. Lot 7109 represents the primary individual from this burial and was interred below the remains of Lot 7146. The individual was prone and extended with head to the west. The left arm was crossed under the torso and the right arm was at the side. Elements were recovered in situ. An unknown red and white friable and porous material was recovered from the area adjacent to the south wall of the coffin by the left femur.
Coffin Lot Material Culture: Fragments of cloth were recovered.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis, the auricular surface, and cranial suture closure. Stature was estimated to be 68.90 ±

2.5 inches.

The left maxillary PM^1 and M^2 were present. Loose maxillary teeth were recovered. The left mandibular PM_1 and M_2 were present. Loose mandibular teeth were recovered. Carious lesions were observed.

Irregular formation of the right hand carpals was observed. Osteophytic lipping was observed on the sternum, ribs, vertebrae, and tibiae. An exostosis was observed on the right patella. Schmorl's nodes were present in the thoracic vertebrae.

Identification: There is no putative identification associated with Burial Lot 7109 at this time.

Strontium isotope ratios: 7109-31: 0.70982, 7109-1: 0.70974

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 7109 is included within Category B.

Burial Lot: 7179

Coffin Lot: 7179

Associated Lot: None

Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the walls intact. The individual was supine and extended with head to the west. The right arm was at the side and the left arm was crossed over the torso. Elements were recovered in situ. Adherent metal was observed on the distal humeri. A button was recovered from the west end of the coffin near the right humerus.

Coffin Lot Material Culture: One 2-holed shell button was recovered.

Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis and the auricular surface. Stature was estimated to be 68.23 ± 2.5 inches.

The right maxillary PM^{1-2}, M^{1-3}, and left maxillary I^1, and M^{1-3} were present. Loose maxillary teeth were recovered. The right mandibular PM_2, M_{1-3}, and left mandibular I_2, and M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

An osteolytic pit was observed in the vertebrae. Periostitis was visible on the left femur. Schmorl's nodes were present in the thoracic and lumbar vertebrae. A cut was observed on the left distal radius, left metacarpals, and left phalanges. There was no evidence of healing. This is a unique perimortem trauma; causes unknown.

Identification: There is no putative identification associated with Burial Lot 7179 at this time.

Strontium isotope ratios: 7179-30: 0.70908, 7179-32: 0.70927

The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within two separate tables, Tables 6.4 and 6.5, but only differ by 0.0002. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017), Giblin et al. (2013), Knudson et al. (2012), Maurer et al. (2013), Oelze et al. (2012), and Price et al. (2004) for British North America, the Great Hungarian Plain, Western Ireland, Germany, Northern Alps region of Austria, and Austria/Eastern Bavaria/"Danube Valley", respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 7179 is included within Category A.

Burial Lot: 7180
Coffin Lot: 7180
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the base intact. The individual was supine and extended with head to the west. The right arm was crossed over the torso and the left arm was at the side. Elements were recovered in situ. Adherent wood was observed on the proximal humeri, right os coxae, left proximal femur, and left foot.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with heavy fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface. Stature was not observable for this individual.

The left maxillary M^3 was present. Loose maxillary teeth were recovered. The right mandibular M_{2-3} and left mandibular M_{2-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

An exostosis was observed on the left clavicle. Schmorl's nodes were present in the thoracic vertebrae.
Identification: There is no putative identification associated with Burial Lot 7180 at this time.
Strontium isotope ratios: 7180-3: 0.70936, 7180-1: 0.70942
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 7180 is included within Category A.

Burial Lot: 7181
Coffin Lot: 7181
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the walls and base intact. The individual was supine and extended with head to the west. The arms were to the sides. Elements were recovered in situ. Adherent wood was observed on the left scapula, proximal right ulna, left arm, left hand, left os coxae, and right foot. A round metal tag on a wire was recovered from the right wrist.
Coffin Lot Material Culture: A round metal tag on a wire was recovered. The number "18" was imprinted on the tag.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. The cranium was partially fragmented with large portions of the frontal and left and right parietal bones absent. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface. Stature was estimated to be 66.88 ± 2.8 inches.

The right maxillary M^2, and left maxillary PM^{1-2}, and M^3 were present. Loose maxillary teeth were recovered. The right mandibular PM_1, M_{1-3}, and left mandibular C, PM_{1-2}, and M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were

observed.

Ankylosis was observed between the right os coxae and sacrum. An osteolytic pit was observed in the T1 vertebra. The L5 vertebra had collapsed. Osteophytic lipping was observed on the sternum, a rib, vertebrae, right radius, and sacrum. A pseudojoint was observed between the L4 and L5 vertebrae. Exostoses were observed on the right ulna, ossa coxae, right tibia, and left fibula. Healed fractures to the right hand, right tibia, and right foot were observed. A planar craniotomy was observed. Cut marks to the maxillae, saggital suture, and the occipital were observed. Severing cuts to the mandible, sternum, ribs, atlas, and axis were observed.
Identification: There is no putative identification associated with Burial Lot 7181 at this time.
Strontium isotope ratios: 7181-30: 0.70984, 7181-32: 0.70987
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 7181 is included within Category B.

Burial Lot: 7186
Coffin Lot: 7186
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin was fairly preserved with large sections of the base intact. The individual was supine and extended with head to the west. The arms were crossed over the pelvis. Elements were recovered in situ.
Coffin Lot Material Culture: Three large 4-holed shell buttons, two small 4-holed shell buttons, one safety pin, and fabric were recovered.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of indeterminate adult was estimated for this individual. Areas of element fusion were assessed to confirm the individual fell into the adult age category. Stature was not observable for this individual.

The right maxillary C, PM^{1-2}, M^{1-3}, and left maxillary PM^{1-2}, M^{1}, and M^{3} were present. Loose maxillary teeth were recovered. The right mandibular M_{1-3} and left mandibular M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

Osteophytic lipping was observed on the right patella. A pseudojoint was observed between right os coxae and sacrum. An exostosis was observed on the left scapula. Schmorl's nodes were present in the thoracic and lumbar vertebrae. A healed fracture to the left foot was observed.
Identification: There is no putative identification associated with Burial Lot 7186 at this time.
Strontium isotope ratios: 7186-30: 0.71036, 7186-32: 0.70894
The $^{87}Sr/^{86}Sr$ ratio identified for the RM_3 falls within Table 6.4. The $^{87}Sr/^{86}Sr$ ratio identified for the RM_1 falls within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017) and Knudson et al. (2012) for British North America and Western Ireland, respectively, could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It more likely that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0014) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 7186 is included within Category A.

Burial Lot: 7194
Coffin Lot: 7194
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin was fairly preserved with large sections of the walls and base intact. The individual was supine and extended with head to the west. The arms were to the sides. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in poor condition with heavy fragmentation. All elements were recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic characteristics of this individual indicated an individual of ambiguous sex and of European ancestry. An age range of indeterminate adult was estimated for this individual. Areas of element fusion were assessed to confirm the individual fell into the adult age category. Stature was not observable for this individual.

The right maxillary C, M^1, and left maxillary C, PM^1, and M^1 were present. Loose maxillary teeth were recovered. The left mandibular M_{1-3} were present. Loose mandibular teeth were recovered. Calculus, carious lesions, periodontitis, and enamel hypoplasia were observed.

Degeneration of the proximal left radius was observed. Osteophytic lipping was observed on the radii, hands, and femora. Periostitis was visible on the right tibia. Mastoid abscesses were observed in the temporal bones.
Identification: There is no putative identification associated with Burial Lot 7194 at this time.
Strontium isotope ratios: 7194-30: 0.71052, 7194-32: 0.70999
The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 7194 is included within Category A.

Burial Lot: 7195
Coffin Lot: 7195
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was fairly preserved with and small sections of the walls and large sections of the base intact. The individual was supine and extended with head to the west. The arms were to the sides. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in poor condition with heavy fragmentation. The sternum was not recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of indeterminate adult was estimated for this individual. Areas of element fusion were assessed to confirm the individual fell into the adult age category. Stature was not observable for this individual.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The right mandibular PM_{1-2}, and left mandibular PM_{1-2}, and M_3 were present. Loose mandibular teeth were

recovered. Calculus and carious lesions were observed.

Degeneration of the proximal articular surface of the sacrum was observed. Osteophytic lipping was observed on the sacrum.

Identification: There is no putative identification associated with Burial Lot 7195 at this time.

Strontium isotope ratios: 7195-3: 0.70723, 7195-1: 0.70693

The $^{87}Sr/^{86}Sr$ ratio identified for the RM^{1} falls 0.0001 above the upper $^{87}Sr/^{86}Sr$ value for the range outlined in Table 6.3, but still within the ranges proposed within this table. The $^{87}Sr/^{86}Sr$ value for the RM^{3} sample falls within Table 6.3. Burial Lot 7195 is included within Category A.

Burial Lot: 8047

Coffin Lot: 8047

Associated Lot: None

Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin had decomposed and only a wood stain was observed. The individual was supine and extended with head to the west. The right humerus was to the side. The left arm, right radius, and right ulna were recovered between the tibiae. Elements were recovered in situ.

Coffin Lot Material Culture: None.

Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. The sternum was not recovered. The right hand was not present. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on cranial suture closure. Stature was estimated to be 69.13 ± 2.8 inches.

The left maxillary M^{1} was present. Loose maxillary teeth were recovered. The right mandibular PM_{1-2}, M_{1-2} were present. Loose mandibular teeth were recovered. Calculus was observed.

A biplanar craniotomy was observed. A perimortem trauma, unhealed cuts excising the bone of the right and left frontal sinuses, was observed. Cut marks to the right radius and right ulna were observed. Severing cuts to the right radius, right ulna, left ulna, left tibia, and left calcaneus were observed.

Identification: There is no putative identification associated with Burial Lot 8047 at this time.

Strontium isotope ratios: 8047-30: 0.71040, 8047-32: 0.70994

The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 8047 is included within Category B.

Burial Lot: 8113

Coffin Lot: 8113

Associated Lot: None

Burial Description: The burial was located through mechanical stripping. No grave shaft was

visible. The coffin was fairly preserved with a partially intact coffin lid and large sections of the walls and small sections of the base intact. The individual was supine and extended with head to the west. The arms were crossed over the torso. Elements were recovered in situ. One copper straight pin was recovered from the west end of the coffin near the left temple.
Coffin Lot Material Culture: One copper straight pin.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of young adult was estimated for this individual based on the pubic symphysis, the auricular surface, and cranial suture closure. Stature was estimated to be 67.23 ± 2.5 inches.

All maxillary teeth were present. The right mandibular PM_2 , M_{1-3}, and left mandibular PM_{1-2}, M_{1-3}, were present. Loose mandibular teeth were recovered. Calculus was observed.

Osteophytic lipping was observed on the ulnae, left radius, vertebrae, and left foot. Periostitis was visible on the right tibia. Tuberculosis was observed in the right ribs three through ten, left ribs two through ten, and the T4 and T5 vertebrae. Exostoses were observed on the right humerus, ulnae, right patella, and tibiae.
Identification: There is no putative identification associated with Burial Lot 8113 at this time.
Strontium isotope ratios: 8113-30: 0.71034, 8113-32: 0.71047
The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 8113 is included within Category A.

Burial Lot: 8114
Coffin Lot: 8114
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the north wall intact. The individual was supine and extended with head to the west. The right arm was crossed over the pelvis and the left arm was at the side. Elements were recovered in situ.
Coffin Lot Material Culture: One three-inch pair of iron scissors was recovered.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface. Stature was estimated to be 68.81 ± 2.8 inches.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The right mandibular M_{2-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

Schmorl's nodes were present in the thoracic vertebrae. A biplanar craniotomy was observed.
Identification: There is no putative identification associated with Burial Lot 8114 at this time.

Strontium isotope ratios: 8114-14: 0.70992, 8114-16: 0.70985
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. The RM^1 $^{87}Sr/^{86}Sr$ signature falls 0.0001 above the Table 6.5 range, but still within the $^{87}Sr/^{86}Sr$ ratio ranges for locations described in this table. Burial Lot 8114 is included within Category B.

Burial Lot: 8125
Coffin Lot: 8125
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin was poorly preserved with small sections of the walls and base intact. The individual was supine and extended with head to the west. The right arm was crossed over the torso and the left arm was crossed under the pelvis. Elements were recovered in situ.
Coffin Lot Material Culture: One safety pin was recovered.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on the pubic symphysis. Stature was estimated to be 64.16 ± 2.5 inches.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The right mandibular C, PM_1, and left mandibular I_2 were present. Loose mandibular teeth were recovered. Calculus and enamel hypoplasia were observed.

An endocranial lesion was observed on the frontal bone. A bipartite right patella was observed. Eburnation of the L5 vertebra, distal left humerus, proximal left radius, and sacrum was observed. Degeneration of the cervical vertebrae and distal right os coxae was observed. Osteophytic lipping was observed on the ribs, right scapula, vertebrae, humeri, right radius, ulnae, ossa coxae, sacrum, and right femur. An exostosis was observed on the right scapula. Schmorl's nodes were present in the thoracic vertebrae. Healed fractures to the sternum and ribs were observed. Excessive reactive bone growth was observed on the left os coxae and right femur. Cut marks to the right femur were observed.
Identification: There is no putative identification associated with Burial Lot 8125 at this time.
Strontium isotope ratios: 8125-14: 0.71043, 8125-15: 0.71087
The $^{87}Sr/^{86}Sr$ ratio identified for the RM^1 falls within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ratio identified for the RM^2 falls within Table 6.6. Though the signatures do not fall within the same table, they are only separated by 0.0004. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Hermer et al. (2013), Price et al. (2007), and Price et al. (2004) for Northwest Poland, British North America, Wales, Jefferson County, Wisconsin, and the Czech Republic, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 8125 is included within Category B.

Burial Lot: 8130
Coffin Lot: 8130
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. The grave shaft was

indistinct. The coffin was poorly preserved with small sections of the walls intact. The individual was supine and extended with head to the west. The arms were crossed over the torso. Elements were recovered in situ.
Coffin Lot Material Culture: One safety pin was recovered.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis and the auricular surface. Stature was estimated to be 68.00 ± 2.5 inches.

The left maxillary I^2 and PM^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular I_{1-2}, C, PM_{1-2}, and left mandibular PM_1 were present. Loose mandibular teeth were recovered. Calculus and enamel hypoplasia were observed.

An endocranial lesion was observed on the occipital. Osteolytic pits were observed in the feet. Os acromiale was observed in the scapulae. A bipartite right patella was observed. Incomplete fusion was observed on the sphenoid. Irregular fusion was observed on the left scapula. An irregular formation of the right and left hamates was observed. Eburnation of the right carpals, left carpals, and right foot was observed. Osteophytic lipping was observed on the right clavicle, right scapula, vertebrae, right hand, left radius, and feet. Healed fractures to the ribs and left foot were observed. A biplanar craniotomy was observed. Cut marks to the right femur were observed.
Identification: There is no putative identification associated with Burial Lot 8130 at this time.
Strontium isotope ratios: 8130-14: 0.71112, 8130-2: 0.71078
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 8130 is included within Category B.

Burial Lot: 8133
Coffin Lot: 8133
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved and only a wood stain was observed. The individual was supine and extended with head to the west. The arms were crossed over the pelvis. Elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. All elements were recovered. The cranium was complete. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on cranial suture closure. Stature was not observable for this individual.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The left mandibular M_2 was present. Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed.

The right calcaneus and right talus had collapsed. Eburnation of the left scaphoid was observed. Degeneration of the medial right clavicle, cervical vertebrae, distal left radius, left scaphoid and lunate, distal left os coxae, right calcaneus, and right talus was observed.

Osteophytic lipping was observed on the right scapula, right ulna, left radius, and right and left ossa coxae. An osteoma was observed on the right parietal of the cranium. Periostitis was visible on the right and left ossa coxae, right leg, right foot, and left tibia. Osteomyelitis was observed in the right tibia and left femur. An exostosis was observed on the right humerus. Schmorl's nodes were present in the thoracic vertebrae. Healed fractures to the left parietal, nasals, maxillae, left ribs, right hand, left radius, right fibula, right foot, and left femur were observed. Excessive reactive bone growth was observed on the left scaphoid, left os coxae, femora, and left calcaneus. The left parietal and left os coxae were remodeled. Cut marks to the tibiae were observed.
Identification: There is no putative identification associated with Burial Lot 8133 at this time.
Strontium isotope ratios: 8133-30: 0.71057, 8133-31: 0.70993
The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 8133 is included within Category B.

Burial Lot: 8174
Coffin Lot: 8174
Associated Lot: 8198
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin had decomposed and only a wood stain was observed. The grave contains the multiple burial of Lots 8174 and 8198. Lot 8174 represents the secondary individual from this burial and was interred above the remains of Lot 8198. The individual was supine and extended with the head to the west. The arms were crossed over the torso. Elements were recovered in situ.
Coffin Lot Material Culture: A clear glass tube, similar to an eyedropper, was recovered.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. The left tibia, left fibula, and feet were not present in this burial. The cranium was partially fragmented. The calotte was not recovered. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on the auricular surface. Stature was not observable for this individual.

The right maxillary M^3 and left maxillary M^3 were present. The right mandibular M_1, M_3 and left mandibular I_2, PM_{1-2}, M_1, and M_3 were present. Loose mandibular teeth were recovered. Calculus was observed.

Degeneration of the right and left acromioclavicular joints, the L4 and L5 vertebrae joint, and the proximal radii was observed. Osteophytic lipping was observed on the sternum, ribs, left scapula, vertebrae, radii, ulnae, hands, and right os coxae. A pseudojoint was observed between the L3 and L4 vertebrae. Periostitis was visible on the right ulna, femora, right tibia, and right fibula. Mastoid abscesses were observed in the right and left temporal bones. Exostoses were observed on the ulnae, ossa coxae, and right tibia. Schmorl's nodes were present in the thoracic vertebrae. A biplanar craniotomy was observed. Cut marks were observed at the right temporal. Severing cuts to the mandible, right mandibular M_1, right radius, right ulna, and right tibia were

observed.
Identification: There is no putative identification associated with Burial Lot 8174 at this time.
Strontium isotope ratios: 8174-19: 0.71045, 8174-17: 0.71067
The $^{87}Sr/^{86}Sr$ ratio identified for the LM_1 falls within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ratio identified for the LM_3 falls within Table 6.6. Though the signatures do not fall within the same table, they are only separated by 0.0002. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012), Price et al. (2007), and Price et al. (2004) for Northwest Poland, British North America, the Great Hungarian Plain, Wales, Western Ireland, Jefferson County, Wisconsin, and the Czech Republic, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Burial Lot 8174 is included within Category B.

Burial Lot: 8180
Coffin Lot: 8180
Associated Lot: 8199
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin had decomposed and only a wood stain was observed. The grave contains the multiple burial of Lots 8180 and 8199. Lot 8180 represents the secondary individual from this burial and was interred above the remains of Lot 8199 in the west end of the coffin. The individual was prone and extended with the head to the west. The right humerus was at the side. The left arm was folded back above the torso. Elements were recovered in situ.
Coffin Lot Material Culture: A metal buckle and unidentified red metal fragments were recovered.
Osteological Description: Adult. The remains were in good condition with light fragmentation. The sternum, right radius, and right ulna were not present in this burial. The cranium was partially fragmented. The calotte was not recovered. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the pubic symphysis and the auricular surface. Stature was estimated to be 62.88 ± 2.5 inches.

The right maxillary I^1, M^{1-2}, and left maxillary M^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular I_2, C, PM_1, M_{1-3}, and left mandibular I_2, C, PM_{1-2}, and M_{1-2} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

Osteophytic lipping was observed on the left radius. Exostoses were observed on the ossa coxae. Schmorl's nodes were present in the lumbar vertebrae. A planar craniotomy was observed. Cut marks to the right clavicle and a left rib were observed. Severing cuts to the ribs were observed.
Identification: There is no putative identification associated with Burial Lot 8180 at this time.
Strontium isotope ratios: 8180-30: 0.71137, 8180-17: 0.71019
The $^{87}Sr/^{86}Sr$ ratio identified for the RM_1 falls within the 0.001 gap between Tables 6.6 and 6.7. The $^{87}Sr/^{86}Sr$ ratio identified for the LM_3 falls within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. (2013), Emery et al. (2017) and Haverkort et al. (2008) for Northwest Poland, British North America, and the Lake Baikal region of Siberia, respectively, could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is more likely that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0012)

represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 8180 is included within Category B.

Burial Lot: 8199
Coffin Lot: 8180
Associated Lot: 8180
Burial Description: The burial was located through mechanical stripping. No grave shaft was visible. The coffin had decomposed and only a wood stain was observed. The grave contains the multiple burial of Lots 8180 and 8199. Lot 8199 represents the primary individual from this burial and was interred below the remains of Lot 8180 in the east end of the coffin. The individual was supine and extended with the head to the west. The right arm appeared to be disarticulated and was above the vertebral column. The left arm also appeared to be disarticulated and crosses over the vertebrae and pelvis. Elements were recovered in situ.
Coffin Lot Material Culture: A metal buckle and unidentified red metal fragments were recovered.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation. The sternum, right clavicle, and right scapula were not present in this burial. The cranium was partially fragmented. The calotte was not recovered. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of indeterminate adult was estimated for this individual. Areas of element fusion were assessed to confirm the individual fell into the adult age category. Stature was estimated to be 65.85 ± 2.5 inches.

The right maxillary I^2, PM^{1-2}, and left maxillary I^1, and PM^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular I_1, C, PM_1, and left mandibular I_{1-2}, C, and PM_{1-2}, were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed.

Ankylosis was observed between the C2 and C3 vertebrae. Degeneration of the left lateral clavicle and cervical vertebrae was observed. Osteophytic lipping was observed on the ribs, left scapula, vertebrae, sacrum, ossa coxae, and right foot. A pseudojoint was observed between two left rib shafts. Periostitis was visible on the tibiae and right fibula. Osteomyelitis was observed in the right tibia. Exostoses were observed on the humeri. Healed fractures to the ribs, left hand, right tibia, and right fibula were observed. Excessive reactive bone growth was observed on the left hand, right tibia, and right fibula. A planar craniotomy was observed. Cut marks to the glabella and right sphenoid were observed. A severing cut to the left clavicle was observed.
Identification: There is no putative identification associated with Burial Lot 8199 at this time.
Strontium isotope ratios: 8199-14: 0.71072, 8199-18: 0.71088
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 8199 is included within Category B.

Burial Lot: 9223
Coffin Lot: 9223
Associated Lot: None

Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was poorly preserved with small sections of the walls intact. The individual was supine and extended with head to the west. The arms were crossed over the pelvis. Elements were recovered in situ. Adherent paper was observed on the left proximal humerus, right distal tibia, and proximal left femur.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the auricular surface. Stature was estimated to be 69.5 ± 2.8 inches.

The right maxillary M^{1-3}, and left maxillary PM^2, and M^{1-2} were present. Loose maxillary teeth were recovered. The right mandibular M_{1-2}, and left mandibular PM_2, M_{1-3} were present. Loose mandibular teeth were recovered. Calculus and carious lesions were observed.

Ankylosis was observed between the T8 and T9 vertebrae. An osteolytic pit was observed in the left foot. Degeneration of the distal ossa coxae was observed. Osteophytic lipping was observed on the ribs, scapulae, vertebrae, right femur, and left foot. Periostitis was visible on the left femur, tibiae, fibulae, and feet. Osteomyelitis was observed in the right os coxae. Exostoses were observed on the ulnae. Schmorl's nodes were present in the thoracic vertebrae. Healed fractures to the right os coxae and left foot were observed. The right os coxae and left patella were remodeled. Excessive reactive bone growth was observed on the right os coxae, right foot, and left patella. Severing cuts to the right femur were observed.
Identification: There is no putative identification associated with Burial Lot 9223 at this time.
Strontium isotope ratios: 9223-19: 0.71089, 9223-17: 0.70998
The $^{87}Sr/^{86}Sr$ ratio identified for the LM_1 falls within Table 6.6. The $^{87}Sr/^{86}Sr$ ratio identified for the LM_3 falls within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Buko et al. 2013, Emery et al. (2017), and Haverkort et al. (2008) for Northwest Poland, British North America, and the Lake Baikal region of Siberia, respectively, could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is possible that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0009) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 9223 is included within Category B.

Burial Lot: 9262
Coffin Lot: 9262
Associated Lot: 9328
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was fairly preserved with small sections of the walls and base intact. The grave contains the multiple burial of Lots 9262 and 9328. Lot 9262 represents the primary individual from this burial and was interred below the remains of Lot 9328. The individual was supine and extended with head to the west. The arms were crossed over the torso. Elements were recovered in situ.
Coffin Lot Material Culture: One safety pin was recovered.
Osteological Description: Adult. The remains were in good condition with light fragmentation. All elements were recovered. The cranium was partially fragmented. The sexually dimorphic

anthroposcopic and osteometric characteristics of this individual indicated a probable male of European ancestry. An age range of young adult was estimated for this individual based on the pubic symphysis and the auricular surface. Stature was estimated to be 66.72 ± 2.5 inches.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The left mandibular M_3 was present. Loose mandibular teeth were recovered. Calculus, carious lesions, periodontitis, and enamel hypoplasia were observed.

Cribra orbitalia was visible in the left orbit. Degeneration of the proximal humeri and the right and left acromioclavicular joints was observed. Osteophytic lipping was observed on the ribs, vertebrae, humeri, radii, ulnae, right os coxae, and right foot. An exostosis was observed on the right os coxae. Schmorl's nodes were present in the thoracic and lumbar vertebrae.
Identification: There is no putative identification associated with Burial Lot 9262 at this time.
Strontium isotope ratios: 9262-32: 0.70980, no second sample
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 9262 is included within Category B.

Burial Lot: 9263
Coffin Lot: 9263
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The grave shaft was marked by a dark soil stain. The coffin was fairly preserved with small sections of the walls intact. The individual was supine and extended with head to the west. The arms were crossed over the torso. Elements were recovered in situ. A large white enamelware bowl with a blue rim was recovered above the femora.
Coffin Lot Material Culture: One safety pin and one 5.5 x 12.7 inch white enamelware bowl were recovered.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation. All elements were recovered. The cranium was fragmented throughout. The sexually dimorphic anthroposcopic and osteometric characteristics of this individual indicated a male of European ancestry. An age range of old adult was estimated for this individual based on the pubic symphysis and the auricular surface. Stature was estimated to be 67.79 ± 2.8 inches.

No maxillary teeth were present in situ. Loose maxillary teeth were recovered. The right mandibular M_2 was present. Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed.

An exocranial lesion was observed on the frontal and left parietal. Endocranial lesions were observed throughout the cranium. Cribra orbitalia was visible in the right and left orbits. Osteolytic pits were observed in the vertebrae and sacrum. Sclerotic medullary bone was observed on the cranium, sternum, clavicles, and scapulae. An unknown infection was visible as periosteal lesions on sternum, ribs, scapulae, left humerus, left ulna, the ossa coxae, left femur, and tibiae. Degeneration of the cervical vertebrae was observed. Osteophytic lipping was observed on the vertebrae, humeri, radii, ulnae, left os coxae, sacrum, and right foot. Exostoses were observed on the ossa coxae. A healed fracture to the right first rib was observed.
Identification: There is no putative identification associated with Burial Lot 9263 at this time.
Strontium isotope ratios: 9263-19: 0.71232, 9263-17: 0.71068

The $^{87}Sr/^{86}Sr$ ratio identified for the LM_1 falls within Table 6.7. The $^{87}Sr/^{86}Sr$ ratio identified for the LM_3 falls within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ range proposed by Haverkort et al. for the Lake Baikal region of Siberia is the only range identified in the Chapter 6 tables that would potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is more likely that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0017) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility.

Burial Lot: 9321
Coffin Lot: 9321
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. The grave shaft was indistinct. The coffin was fairly preserved with large sections of the walls intact. The individual was supine and extended with head to the west. The right arm was at the side and the left arm was crossed over the pelvis. Elements were recovered in situ. Adherent metal was observed on the right zygomatic, right and left distal humeri, and left distal ulna. Three buttons were recovered from the torso.
Coffin Lot Material Culture: Three white glass buttons were recovered.
Osteological Description: Subadult. The remains were in good condition with moderate fragmentation. The sternum, left hand, left os coxae, and sacrum were not recovered. The cranium was partially fragmented. Sex, ancestry, and stature were not determined for this individual due to juvenile age. Age estimation based on the degree of fusion ranges between 7 and 12 years. Estimated dental age ranges between 6.5 and 11.5 years. Osteometric age was not observable.

The right maxillary M^1 and left maxillary M^1 were present. Loose maxillary teeth were recovered. The left mandibular M_1 was present. Loose mandibular teeth were recovered. Carious lesions were observed.

Cribra orbitalia was visible in the left and right orbits. An unknown multietiological pathology was observed on one rib. Periostitis was visible on the right and left humeri, right and left femora, right and left tibiae, and right and left fibulae.
Identification: This individual has been identified as Rosa Rosche.
Strontium isotope ratios: 9321-19: 0.70936, no second sample
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 9321 appears in Chapter 6. Burial Lot 9321 is included within the bioavailable category.

Burial Lot: 9322
Coffin Lot: 9322
Associated Lot: None
Burial Description: The burial was located through mechanical stripping. The grave shaft was indistinct. The coffin was poorly preserved with no sections of the walls or base intact. The individual was semi-flexed and extended with head to the west. The right arm was at the side. The left arm was originally crossed over the torso based on the position of the left hand. The legs were bent and folded under themselves. The individual appeared too large for the size of the coffin. Elements were recovered in situ.

Coffin Lot Material Culture: None.
Osteological Description: Subadult. The remains were in fair condition with moderate fragmentation. The right fibula was not recovered. The cranium was partially fragmented. Sex, ancestry, and stature were not determined for this individual due to juvenile age. Age estimation based on the degree of fusion ranges between 12 and 15 years. Estimated dental age ranges between 8.5 and 13.5 years. Osteometric age measurements range between 10.0 and 11.2 years.

The right mandibular M^1 was present. Loose maxillary teeth were recovered. The right mandibular M_{1-2} and M_2 and left mandibular M_{1-3} were present. Loose mandibular teeth were recovered. Calculus, carious lesions, and periodontitis were observed.

An irregular formation of the cranium was observed.
Identification: This individual has been identified as Willie Rosche.
Strontium isotope ratios: 9322-30: 0.70947, 9322-31: 0.70931
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 9322 appears in Chapter 6. Burial Lot 9322 is included within the bioavailable category.

The burial descriptions for the following lots have been reproduced with permission from the Richards et al. 2016 UWM-CRM Report of Investigations, *Nine for Mortal Men Doomed to Die: The Archaeology and Osteology of the 2013 Milwaukee County Poor Farm Cemetery Project (Froedtert Tract- 47 MI 0527).*

Burial Lot: 10093
Coffin Lot: 10093
Associated Lot: None
Burial Description: This burial was identified by the stain of a grave shaft and the coffin handles exposed during mechanical stripping. The coffin was partially preserved with portions of the walls and base remaining. The individual was supine and extended with head to the west and hands over the pelvis. Elements were recovered in situ. A shoe was recovered to the left of the cranium in the northwest corner of the coffin.
Coffin Lot Material Culture: One shroud fragment, five fabric fragments, one metal snap, and one women's left shoe were recovered during excavation.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation; all elements were recovered for this individual. The cranium is mostly complete and partially fragmented. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a probable male of European ancestry. An age range of young adult was estimated for this individual based on condition of the auricular surface, condition of the right pubic symphysis, and cranial suture closure. Stature was estimated to be 71.77 ± 2.8 in. from the left femur.

All maxillary teeth were present. Calculus was identified on the buccal, labial, and lingual surfaces of the right maxillary C^1, PM^{1-2}, M^{1-3}, and the left PM^{1-2} and M^{1-3}. Carious lesions marked the occlusal surface of the right maxillary M^{1-2} and the left M^{2-3}. All mandibular teeth were present. Calculus marked the buccal, labial, and lingual surfaces of all mandibular teeth. Carious lesions marked the occlusal surface of the left and right mandibular M_{1-3}. Four loose maxillary incisors were recovered.

Incomplete fusion was visible on the medial clavicles, sternum, sacrum, iliac crests of the innominates, and metopic suture of the cranium. Eburnation was identified on the right temporomandibular joint.
Identification: There is no putative identification associated with Burial Lot 10093 at this time.
Strontium isotope ratios: 10093-19: 0.71152, 10093-17: 0.71087
The $^{87}Sr/^{86}Sr$ ratio identified for the LM_1 falls within the 0.001 gap between Tables 6.6 and 6.7. The $^{87}Sr/^{86}Sr$ ratio identified for the LM_3 falls within Table 6.6. The more radiogenic signature of the LM_1 would be consistent with locations such as those proposed by Haverkort et al. (2008) and Sjögren et al. (2009). It is possible that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual represent a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 10093 is included within Category A.

Burial Lot: 10097
Coffin Lot: 10097
Associated Lot: 10137
Burial Description: The burial was identified by the stain of the grave shaft. The coffin was partially preserved with large fragments of the walls and base remaining. The east end of the coffin was disturbed during mechanical stripping. The coffin contained the mixed burial of Lots 10097 and 10137. Lot 10097 represents the primary individual from this burial. The individual was supine and extended with head to the west and arms to the sides. Elements were recovered in situ. An unidentified adherent material was observed on the left radius and right femur.
Coffin Lot Material Culture: One 1-hole 34-line leather button, one 4-hole 40-line stone button, and one 4-hole 27-line bone button were recovered during excavation.
Osteological Description: Adult. The remains were in good condition with moderate fragmentation; the sternum was not recovered. The cranium is partially complete and lightly fragmented. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the condition of the pubic symphysis. Stature was not observable for this individual.

All maxillary teeth were present except the right PM^2, M^{1-2}, and the left PM^2 and M^{1-3}. Calculus was observed on the buccal, labial, and lingual surfaces of the right maxillary I^1, C^1, PM^1, M^3, and left maxillary I^1, as well as on the labial surface of the right maxillary I^2 and left maxillary I^2, C^1, and PM^1. Carious lesions were observed in the labial surface of the right maxillary I^1 and the left maxillary I^{1-2}. Remodeled alveolus was observed in the area of the right maxillary PM^2, M^{1-2}, and the left maxillary PM^2 and M^{1-3}. All mandibular teeth were present except the right M_3 and the left M_{1-3}. Calculus was observed on the buccal, labial, and lingual surfaces of the right mandibular I_2, C_1, PM_{1-2}, and M_{1-2}. A carious lesion was observed in the occlusal surface of the right mandibular I_1. Remodeled alveolus was observed in the area of the right mandibular M_3 and the left mandibular M_{1-3}.

Hypertrophic osseous growth was observed on the right humerus, left humerus, right ulna, left proximal ulna, right femur, left proximal femur, right tibia, left distal tibia, and in both hands. Ankylosis was observed between the right proximal tibia and right proximal fibula, as well as between phalanges in the right hand. Eburnation was observed in the left elbow joint, on the right distal ulna, right distal radius, and in both hands. Schmorl's nodes were present in the thoracic and lumbar vertebrae. Osteophytic lipping was observed on the left and right lateral

scapulae, right proximal radius, right proximal ulna, left distal humerus, left distal radius, left proximal ulna, left patella, right patella, as well as in both hands, both feet, and throughout the vertebrae. Degenerative joint disease was observed in both elbows, both wrists, both sacroiliac joints, both hips, both knees, both ankles, both feet, and throughout the vertebrae. Periostitis was visible on the right and left fibulae. Healed fractures to the ribs, right proximal tibia, and left proximal fibula were observed. Severing cuts to the right and left medial clavicles were observed. A planar craniotomy affected the frontal, right temporal, left temporal, right parietal, left parietal, and occipital. An unhealed fracture to the left distal tibia was observed.
Identification: There is no putative identification associated with Burial Lot 10097 at this time.
Strontium isotope ratios: 10097-30: 0.70950, 10097-31: 0.70948
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 10097 is included within Category B.

Burial Lot: 10099
Coffin Lot: 10099
Associated Lot: 10480
Burial Description: The burial was identified by the stain of the grave shaft. The coffin was partially preserved with large sections of the walls and base remaining. The east end of the coffin had partially collapsed. The coffin contained the mixed burial of Lots 10099 and 10480. Lot 10099 represents the secondary individual from this burial was interred above the primary individual. The individual was supine and extended with head to the east and hands over the pelvis; remains appeared to have shifted due to taphonomic processes. Elements were recovered in situ. Fragments of newspaper were observed in the coffin fill in the area of the west wall.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in good condition with light fragmentation; the sternum and calvarium were not present in this burial. The cranium was partially complete and fragmented through the right temporal, left temporal, and sphenoid. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on the condition of the pubic symphyses and condition of the auricular surface. Stature was estimated to be 66.89 ± 2.5 in. from the left femur and right tibia lengths.

No maxillary teeth were present except the right M^1 and the left M^2. Calculus was observed on the buccal and lingual surfaces of the right maxillary M^1 and left maxillary M^2. Remodeled alveolus was observed in the area of the right maxillary I^{1-2}, and the left maxillary I^{1-2} and M^1. No mandibular teeth were present except the right C_1, PM_{1-2}, and left PM_2 and M_3. Calculus was observed on the buccal and lingual surfaces of the right mandibular PM_{1-2} and left mandibular PM_2. The left mandibular M_3 was impacted. Ten loose teeth were recovered; calculus and carious lesionss were observed among the loose teeth.

Hypertrophic osseous growth was observed on the right distal tibia. Spina bifida was observed in the sacrum. Incomplete fusion of the L5 vertebra was observed. Eburnation was visible in the right hand. Schmorl's nodes were present in the thoracic vertebrae. Osteophytic lipping was observed in both hands. Healed fractures to the anterior mandible, proximal fibula, and several ribs were observed. Severing cuts to the distal ribs were observed. A planar craniotomy affected the frontal, both parietals, both temporals, and occipital.

Identification: There is no putative identification associated with Burial Lot 10099 at this time.
Strontium isotope ratios: 10099-19: 0.70944, 10099-17: 0.70950
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 10099 is included within Category B.

Burial Lot: 10314
Coffin Lot: 10314
Associated Lot: None
Burial Description: This burial was defined by the stain of the grave shaft. The coffin was in fair condition with large sections of the walls and base remaining. The coffin lid had collapsed inward. The individual was supine and extended with head to the west, right arm bent across the torso, and left arm at the side. All elements were recovered in situ.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair to good condition and lightly fragmented. All elements were recovered for this individual. The cranium was complete and in good condition. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a probable male of European ancestry. An age range of middle adult was estimated for this individual based on the condition of the pubic symphyses, condition of the auricular surface, and cranial suture closure. Stature was estimated to be 71.40 ± 2.5 in. from the right femur and left tibia lengths.

No maxillary teeth were recovered except the right PM^{1-2}, M^{1-2}, and the left PM^2 and M^{1-2}. Calculus was observed on the buccal and lingual surfaces of the right maxillary PM^2, M^{1-2}, and the left maxillary PM^2, M^{1-2}. Carious lesions were observed in the occlusal surfaces of the right maxillary PM^{1-2}. All mandibular teeth were recovered for this individual. Calculus was observed on the labial, buccal, and lingual surfaces of all present mandibular teeth. Remodeled alveolus was observed in the area of the left mandibular M_2. Fillings were observed in the right mandibular M_1, M_3, and on the left mandibular M_1 and M_3.

Hypertrophic osseous growth was observed on the distal left ulna, right innominate, on the distal right tibia, and in the cervical vertebrae. Incomplete fusion of the C2 vertebra was observed. Schmorl's nodes were observed in the thoracic and lumbar vertebrae. Osteophytic lipping was observed in the radii, ulnae, ribs, and throughout the vertebrae. A slightly angled planar craniotomy affected the frontal, right temporal, both parietals, and the occipital.
Identification: There is no putative identification associated with Burial Lot 10314 at this time.
Strontium isotope ratios: 10314-30: 0.71123, 10314-32: 71076
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 10314 is included within Category A.

Burial Lot: 10328
Coffin Lot: 10328
Associated Lots: 10400, 10401, 10425 (decommissioned)
Burial Description: The burial was identified by the stain of the grave shaft. The coffin was poorly preserved with the walls and base largely deteriorated. The coffin lid was absent. The

coffin contained the mixed burial of Lots 10328, 10400, 10401, and 10425; during analysis, the remains in commingled Lot 10425 were completely reassigned to the associated lots. Lot 10328 represents the primary individual from this burial. Burial positioning appeared to be formal but further distinction could not be made due to deteriorated burial conditions. Elements were recovered in situ. Textiles were adhered to the right tibia. A pessary was recovered near the southwest wall of the coffin. A copper or bronze circle was recovered in association with vertebrae. Fabric was recovered in association with femora and tibiae from multiple lots.
Coffin Lot Material Culture: One pair of fragmented pants, one copper-alloy clasp, and one ceramic pessary were recovered during excavation. Two clear unidentified glass fragments were recovered during analysis.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation; the clavicles and sternum were not present in this burial. The cranium was partially complete and fragmented through the frontal, maxilla, and sphenoid. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a male of African ancestry. An age range of middle adult was estimated for this individual based on the condition of the pubic symphysis and condition of the auricular surface. Stature was not observable for this individual.

No maxillary teeth were present except the right I^2, C^1, and left PM^1 and M^2. Calculus was observed on the buccal, labial, and lingual surfaces of all present maxillary teeth. Carious lesions were observed in the occlusal surface of the left maxillary PM^1 and M^2. Remodeled alveolus was observed in the area of the right maxillary PM^2, M^{1-2}, and left maxillary M^1. No mandibular teeth were present except the right C_1, PM_1, and M_1. Calculus was observed on the buccal, labial, and lingual surfaces of right mandibular C_1 and M_1. A carious lesion was observed in the occlusal surface of the right mandibular PM_1. Remodeled alveolus was observed in the area of the right mandibular PM_2.

Lytic lesions were observed on both scapulae. Cribra orbitalia was observed in the right orbit. Schmorl's nodes were present in the thoracic and lumbar vertebrae. Osteophytic lipping was observed in the thoracic and lumbar vertebrae. Mastoid abscesses were observed in the left and right temporals. A severing cut mark to the anterior mandible was observed and the left mandible was absent. A planar craniotomy affected the frontal, parietals, and occipital.
Identification: There is no putative identification associated with Burial Lot 10328 at this time.
Strontium isotope ratios: 10328-3: 0.70978, 10328-17: 0.70968
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 10328 is included within Category B.

Coffin Lot: 10343
Burial Lot: 10343
Associated Lot: None
Burial Description: This burial was defined by the outline of the coffin. The coffin was partially preserved with large sections of the walls and base remaining. Kerf lines were visible on the south interior wall. Water was present in the coffin, especially in the east end. The individual was prone and extended with head to the west and arms to the side. Elements were recovered in situ. Water damage was evident throughout the remains.

Coffin Lot Material Culture: One 4-hole 22-line Prosser ceramic button was recovered during excavation.
Osteological Description: Adult. The remains were in fair condition and moderately fragmented. All elements were recovered for this individual. The cranium was in complete and highly fragmented. The sexually dimorphic nonmetric characteristics of this individual indicated a male. Age and stature were not observable for this individual.

No maxillary teeth were present except the right PM^{1-2}, M^1, and the left PM^1 and M^{1-3}. Enamel hypoplasia was visible on the buccal surface of the right maxillary PM^2. Calculus was observed on the buccal surface of the right maxillary PM^{1-2}, M^1, and the left maxillary PM^1 and M^{1-3}. Carious lesions were noted on the occlusal surface of the right maxillary M^1 and the left maxillary M^1. No mandibular teeth were present except the right mandibular M_{1-2} and the left PM_{1-2} and M_1. Enamel hypoplasia was visible on the left mandibular PM_{1-2} and M_1. Calculus was observed on the lingual surface of the right mandibular M_{1-2} and the left mandibular PM_{1-2}, M_1. Carious lesions were noted on the occlusal surface of the right mandibular M_1 and the left mandibular PM_1. Fifteen loose teeth were recovered.

Lytic lesions were observed endocranially. Osteophytic lipping was evident throughout the vertebrae. An area of possible trauma was observed cranially on the frontal between the orbits. A planar craniotomy affected the frontal, both parietals, and occipital.
Identification: There is no putative identification associated with Burial Lot 10343 at this time.
Strontium isotope ratios: 10343-14: 0.71084, 10343-16: 0.71096
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 10343 is included within Category A.

Burial Lot: 10451
Coffin Lot: 10322
Associated Lots: 10322, 10457 (decommissioned)
Burial Description: The burial was identified by the stain of the grave shaft. The coffin was partially preserved with the north and south walls intact but no east or west walls. The coffin lid was absent. The coffin contained the mixed burial of Lots 10322, 10451, and 10457; during analysis, the remains in commingled Lot 10457 were completely reassigned to the associated lots. Lot 10451 represents the secondary individual from this burial and was interred above the primary individual. The individual was supine and extended with head to the west and arms to the side. The remains appeared to have shifted due to taphonomic processes. Elements were recovered in situ. Desiccated brain tissue was recovered. A cross was recovered in the west central area of the coffin.
Coffin Lot Material Culture: One rosary comprised of a copper cross inlayed with wood and two wooden beads were recovered during excavation.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation; all elements were recovered for this individual. The cranium was complete and in good condition. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a male. An age range of middle adult was estimated based on condition of the auricular surface and cranial suture closure. Stature was estimated to be 68.07 ± 2.8 in. from the left femur length.

All maxillary teeth were present except the left M^3. Calculus was observed on the buccal, labial, and lingual surfaces of all present maxillary teeth. Carious lesions were observed on the occlusal surfaces of all present maxillary teeth. Remodeled alveolus was observed in the area of the left maxillary M^3. All mandibular teeth were present except the left M_3. Calculus was observed on the buccal, labial, and lingual surfaces of all present mandibular teeth. Carious lesions were observed on the occlusal surfaces of all present mandibular teeth.

Hypertrophic osseous growth was observed on the left lateral clavicle, left scapula, and left proximal tibia. Lytic lesions were observed on the left lateral clavicle, left scapula, left proximal radius, and in the upper thoracic vertebrae. Eburnation was observed in the C6-7 vertebrae. Schmorl's nodes were observed in the thoracic and lumbar vertebrae. Osteophytic lipping was observed on the left proximal radius and throughout the vertebrae.

Identification: There is no putative identification associated with Burial Lot 10451 at this time.

Strontium isotope ratios: 10451-30: 0.70944, 10451-32: 0.70900

The $^{87}Sr/^{86}Sr$ ratios identified for this individual fall within two separate tables, Tables 6.4 and 6.5, but only differ by 0.0004. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017), Giblin et al. (2013), Knudson et al. (2012), Maurer et al. (2013), Oelze et al. (2012), and Price et al. (2004) for British North America, the Great Hungarian Plain, Western Ireland, Germany, Northern Alps region of Austria, and Austria/Eastern Bavaria/"Danube Valley", respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. Though the RM_1 signature falls within the identified bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee, the RM_3 does not. Burial Lot 10451 is included within Category B.

Burial Lot: 10460

Coffin Lot: 10313

Associated Lots: 10313, 10484

Burial Description: The burial was identified by the stain of the grave shaft. The coffin was partially preserved with large sections of the base and walls intact. The coffin lid had collapsed inward. The coffin contained the mixed burial of Lots 10313, 10460, and 10484. Lot 10460 represents the secondary individual from this burial and was recovered above the primary individual in the northeast end of the coffin. Elements were recovered in situ. Water damage was observed to the humeri, radii, and ulnae. Desiccated brain tissue was recovered.

Coffin Lot Material Culture: None.

Osteological Description: Adult. The remains were in poor condition with heavy fragmentation; only the cranium, mandible, clavicles, scapulae, humeri, radii, ulnae, hands, vertebrae, and ribs were recovered for this individual. The cranium was complete and fragmented through the occipital. The sexually dimorphic nonmetric traits of this individual indicated a probable female of European ancestry. An age range of young adult was estimated for this individual based on cranial suture closure and assessment of element fusion. Stature was not observable for this individual.

All maxillary teeth were present except the right PM^1 and left I^{1-2}. Calculus was observed on the buccal, labial, and lingual surfaces of all present maxillary teeth. All mandibular teeth were recovered for this individual. Calculus was observed on the buccal, labial, and lingual surfaces of all present mandibular teeth.

No pathology was observed for this individual.

Identification: There is no putative identification associated with Burial Lot 10460 at this time.

Strontium isotope ratios: 10460-19: 0.71029, 10460-17: 0.70978
The $^{87}Sr/^{86}Sr$ ratios identified for this individual partially fall within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ ranges proposed by Emery et al. (2017), Giblin et al. (2013), Hermer et al. (2013), Knudson et al. (2012) for British North America, the Great Hungarian Plain, Wales, and Western Ireland, respectively, provide the most similar ranges to the $^{87}Sr/^{86}Sr$ signatures identified for this individual. It should be noted that the signature identified for the LM_3 falls within the identified bioavailable $^{87}Sr/^{86}Sr$ range for Milwaukee. Burial Lot 10460 is included within Category B.

Burial Lot: 10508
Coffin Lot: 10508
Associated Lot: None
Burial Description: The burial was identified by the stain of the grave shaft. The coffin was partially preserved; the north and south wall were collapsed inward and portions of the east and west walls, base, and lid remained. The north wall was removed to facilitate excavation. The coffin contained the remains of a canid, which was interred extended on its right side with head to the east and vertebrae along the south wall. Elements were recovered in situ. Water damage was observed on the hind limbs. Slag was observed in the grave shaft and beneath the coffin.
Coffin Lot Material Culture: None.
Osteological Description: Canine (*Canis familiaris*), subadult. The remains are in good condition. The sexually dimorphic characteristics of the remains indicated a male. An age range of 6 months to 1 year was assessed for the remains based on the estimated dental age and suture closure. Estimated shoulder height is 63.5 cm.

All permanent maxillary teeth are present except the right and left first premolar, though both alveola are well developed. The left second and third maxillary incisors exhibit linear enamel hypoplasia. Articulated maxillary teeth include the right and left second and fourth premolars, the right first molar, and both the right and left second molars. All permanent mandibular teeth are present except for the third molars. Articulated mandibular teeth include the left fourth premolar and both second molars. Incisors and canines exhibit limited wear.

The left eighth rib shows a healed fracture at the angle. The right and left scapulae exhibit unhealed fractures indicative of gun shot entry and exit, respectively. Two canine puncture wounds are located on the supraspinous fossa.
Identification: There is no putative identification associated with Burial Lot 10508 at this time.
Strontium isotope ratios: 10508-RM_1: 0.70972, no second sample
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 10508 appears in Chapter 6. Burial Lot 10508 is included within the bioavailable category.

Burial Lot: 10533
Coffin Lot: 10533
Associated Lot: 10580
Burial Description: The burial was identified by the stain of the grave shaft. The coffin was well preserved with large portions of walls and base intact. The coffin lid had collapsed inward. The coffin contained the mixed burial of Lots 10533 and 10580. Lot 10533 represents the primary individual from this burial. The individual was supine and extended with head to the

west; the left hand was over the pelvis and right hand at the side. No formal positioning was observed for the remains. Elements were recovered in situ. Water damage was observed on the hands.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition with moderate fragmentation; all elements were recovered for this individual. The cranium was complete and fragmented in the temporal and occipital. The sexually dimorphic nonmetric characteristics of this individual indicated a probable male of European ancestry. Age and stature were not observable for this individual.

No maxillary teeth were present except the right PM^{1-2}, M^2, and left I^{1-2}, C^1, PM^{1-2}, and M^2. Enamel hypoplasia was observed on the labial surface of the left maxillary I^1. Calculus was observed on the lingual and labial surface of the right maxillary PM^{1-2} and left maxillary I^1 and M^2, as well as the labial and buccal surfaces of the left maxillary I^2, C^1, and PM^{1-2}. Carious lesions were observed in the right maxillary PM^1 and M^2. Remodeled alveolus was observed in the area of the right maxillary M^1 and the left maxillary M^1. All mandibular teeth were present except the right M_1, M_3, and left M_{1-2}. Enamel hypoplasia was observed on the labial surface of the right mandibular I_{1-2} and left mandibular I_{1-2}. Remodeled alveolus was observed in the area of the right mandibular M_1 and the left mandibular M_{1-2}.

Hypertrophic osseous growth was observed on the sternum, right medial clavicle, right lateral scapula, rib heads, and left proximal femur. Lytic activity was observed endocranially as well as exocranially on the frontal, sphenoid, maxilla, and mandible; the medial clavicles; and left proximal femur. Ankylosis was observed throughout the vertebral column and in both sacroiliac joints. Osteophytic lipping was observed on the medial clavicles and the right distal ulna. Degenerative joint disease was observed in the cervical vertebrae. Heavy wear was observed in the left temporomandibular joint. An uneven planar craniotomy affected the frontal, parietals, and temporals; this was accompanied by small superficial scratches in the frontal, parietals, and temporals. Chemical erosion was observed on the left femur.
Identification: There is no putative identification associated with Burial Lot 10533 at this time.
Strontium isotope ratios: 10533-31: 0.71155, 10533-17: 0.71159
The $^{87}Sr/^{86}Sr$ ratio ranges between Tables 6.6 and 6.7 are not contiguous; there is a 0.001 gap between the values represented. The $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 10533 fall within this gap. However, the locations proposed by Haverkort et al. (2008) and Sjögren et al. (2009) offer bioavailable $^{87}Sr/^{86}Sr$ ranges that span the gap found between modal peaks in this dataset. Burial Lot 10533 is included within Category B.

Burial Lot: 10671
Burial Lot: 10671
Associated Lot: None
Burial Description: This burial was defined by the stain of the grave shaft. The south edge of the grave shaft and coffin were bisected west to east by previous construction of the water pipe. The coffin was poorly preserved; large portions of the walls and base were deteriorated, while half of the east and most of the south walls were absent. The individual was supine and extended with head to the west, right arm at the side, and left arm bent toward the shoulder; the remains appeared to have shifted slightly due to previous disturbance and taphonomic processes.

Elements were recovered in situ. Excavations were made into the north and south walls to reveal the remains. Water damage was observed throughout the remains.
Coffin Lot Material Culture: One ceramic pipe bowl was recovered during excavation.
Osteological Description: Adult. The remains were in poor to fair condition and heavily fragmented; the right femur was not recovered for this individual. The cranium was largely complete and fragmented through the maxillae, sphenoid, frontal, and temporal. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a male. An age range of middle adult was estimated for this individual based on the condition of the right pubic symphysis and condition of the right auricular surface. Stature was estimated to be 66.91 ± 2.8 in. from the left femur length.

No maxillary teeth were present except the right PM^{1} and left PM^{1-2}, C^{1}, and M^{1-3}. Carious lesions were observed on the occlusal surfaces of the right maxillary PM^{1} and left maxillary PM^{1-2} and M^{1-3}. Remodeled alveolus was observed on the right maxillary PM^{2} and M^{1-3}. All mandibular teeth were present for this individual. Enamel hypoplasia was observed on the right mandibular I_{1-2}, C_{1}, PM_{1-2}, and left mandibular I_{1-2}, C_{1}, and PM_{1-2}. Calculus was observed on all mandibular teeth. Remodeled alveolus was observed on the left mandibular M_{1}. Two loose teeth were recovered.

Hypertrophic osseous growth was observed on the right tibia shaft. Cribra orbitalia was observed cranially in both orbits. Schmorl's nodes were observed throughout the vertebrae. Osteomyelitis was observed on the right tibia shaft and right fibula shafts. Healed fractures to the right tibia shaft and right fibula shaft were observed. An irregular craniotomy affected the frontal, both parietals, both temporals, and the occipital. Chemical erosion was observed on the left humeral head and the right fibula shaft.
Identification: There is no putative identification associated with Burial Lot 10671 at this time.
Strontium isotope ratios: 10671-30: 0.70963, 10671-17: 0.70966
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 10671 is included within Category A.

Burial Lot: 10702
Coffin Lot: 10702
Associated Lot: None
Burial Description: This burial was defined by the stain of the grave shaft. The coffin was well preserved with the walls and base in good condition. The individual was supine and extended with the head to the west and arms at the sides; the remains appeared to have shifted due to taphonomic processes. Elements were recovered in situ. Water damage was present throughout the remains.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition and moderately fragmented. All elements were recovered for this individual. The cranium was complete and in good condition. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a probable male. An age range of middle adult was estimated for this individual based on cranial suture closure. Stature was not observable for this individual.

All maxillary teeth were present except the right M^{3} and the left I^{1} and C^{1}. Enamel hypoplasia was visible on the labial surface of the right maxillary I^{1-2}. Calculus was observed on

the buccal surface of the right maxillary PM^{1-2}, M^{1-3}, and left maxillary PM^{1-2}, and M^1. Carious lesions were visible on the occlusal surface of the right maxillary PM^2, M^2, and the left maxillary PM^1 and M^{2-3}. All mandibular teeth were present except the right I_1 and left I_{1-2}, and M_2. Calculus was observed on the labial, buccal, and lingual surfaces of the right mandibular I_2, C_1, PM_1, M_{1-3}, and the left mandibular I_2, C_1, PM_{1-2}, M_1, and M_3. Carious lesions were present on the occlusal surface of the right mandibular M_{1-3}, PM_2, and the left mandibular I_2 and M_3. Remodeled alveolus was observed in the area of the left mandibular I_1 and M_2. Five loose teeth were recovered. Enamel hypoplasia and calculus were observed among the loose teeth.

A lytic lesion was observed on the left distal femur. Cribra orbitalia was observed cranially in both orbits. Porotic hyperostosis was visible cranially on the frontal. Ankylosis was observed in the thoracic vertebrae. Schmorl's nodes were present throughout the vertebral column. Osteophytic lipping was visible throughout the vertebral column and on the glenoid fossa of the left scapula. Periostitis was visible on the right tibia shaft.

Identification: There is no putative identification associated with Burial Lot 10702 at this time.

Strontium isotope ratios: 10702-30: 0.71172, 10702-32: 0.71084

The $^{87}Sr/^{86}Sr$ ratio ranges between Tables 6.6 and 6.7 are not contiguous; there is a 0.001 gap between the values represented. The $^{87}Sr/^{86}Sr$ ratio identified for the RM_1 falls within this gap. The $^{87}Sr/^{86}Sr$ ratio identified for the RM_3 falls within Table 6.6. The more radiogenic signature of the RM_1 would be consistent with locations such as those proposed by Haverkort et al. (2008) and Sjögren et al. (2009). It is possible that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual represent a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 10702 is included within Category A.

Burial Lot: 10707

Coffin Lot: 10707

Associated Lots: 10881, 10884

Burial Description: The burial was identified by the stain of the grave shaft. The coffin was partially preserved with the walls and base largely intact; a section of the south wall was removed during excavation. The coffin contained the mixed burial of Lots 10707, 10881, and 10884. Lot 10707 represents the primary individual from this burial. The individual was supine and extended with head to the west and arms disarticulated to the northwest side of the coffin; the torso and pelvis were raked slightly onto the south wall of the coffin and appeared to have shifted due to taphonomic processes. Elements were recovered in situ. Minor water damage was observed throughout the remains.

Coffin Lot Material Culture: None.

Osteological Description: Adult. The remains were in fair condition with moderate fragmentation; the right tibia, right fibula, and right foot were not present in this burial. The cranium was partially complete and fragmented throughout. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a probable male of European ancestry. An age range of young adult was estimated for this individual based on the condition of the pubic symphysis and the condition of the auricular surface. Stature was estimated to be 68.71 ± 2.8 in. from the left femur length.

All maxillary teeth were recovered for this individual except the left M^{1-2}. Calculus was observed on the lingual and buccal surfaces of the right maxillary M^{1-2}, as well as the lingual and

labial surfaces of the right maxillary I^2, the labial surface of the right maxillary I^1, and the lingual surface of the left maxillary PM^2. An abscess was observed in the area of the left maxillary M^{1-2}. All mandibular teeth were recovered for this individual except the left M^3 and right I^{1-2}, C, and M^{1-2}. Calculus was observed on the lingual and labial surfaces of the left mandibular I_1, as well as the labial surface of the left mandibular I_2; the lingual surfaces of the left mandibular C, M_{1-2}, and right mandibular PM_1; and the buccal surface of the right mandibular M_3. Carious lesions were observed in the occlusal surface of the right mandibular M_3 and the right mandibular M_{1-2}. An abscess was observed in the area of the right mandibular M_2. Remodeled alveolus was observed in the area of the right mandibular M_1. One loose tooth was recovered. Eburnation was observed on the right proximal ulna. Schmorl's nodes were present in the thoracic and lumbar vertebrae. Osteophytic lipping was observed on the right proximal ulna. Periostitis was visible on the left femur. Severing cuts to the clavicles and ribs and a kerf cut to the sternum were observed. A planar craniotomy affected the frontal, parietals, temporals, and occipital; this was accompanied by vertical severing cuts to the frontal, nasals, maxilla, occipital, and sphenoid, as well as angled severing cuts to the right and left mandible. Unhealed fractures to several left ribs were observed.
Identification: This individual has been putatively identified as Joseph Bogdanis.
Strontium isotope ratios: 10707-3: 0.70599, 10707-1: 0.70831
A discussion of the $^{87}Sr/^{86}Sr$ ratios identified for Burial Lot 10707 appears in Chapter 6. Burial Lot 10707 is included within Category B.

Burial Lot: 10735
Coffin Lot: 10735
Associated Lot: None
Burial Description: This burial was defined by the stain of the grave shaft. The coffin was partially preserved with the walls and base in poor condition. The individual was supine and extended with head to the west, right arm over the torso, and left arm over the pelvis; the remains appeared to have shifted due to taphonomic processes. Elements were recovered in situ. Water damage was observed throughout the remains.
Coffin Lot Material Culture: None.
Osteological Description: Adult. The remains were in fair condition and moderately fragmented; all elements were recovered for this individual. The cranium was complete and fragmented through the maxillae and sphenoid. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a male of European ancestry. An age range of middle adult was estimated for this individual based on the condition of the pubic symphysis and cranial suture closure. Stature was estimated to be 66.17 ± 2.8 in. from the left femur length.

All maxillary teeth were present except the left PM^1 and M^1. Calculus was observed on the labial and buccal surfaces of the right maxillary C^1, PM^{1-2}, M^{1-3}, and left maxillary C^1, and M^{1-2}. Carious lesions were observed on the occlusal surface of the right maxillary M^{1-2} and left maxillary M^{1-2}. Remodeled alveolus was observed in the area of left maxillary PM^1. The left maxillary M^2 was observed to contain seven occlusal cusps. All mandibular teeth were present except the right M_3. Enamel hypoplasia was visible on the right mandibular I_{1-2}, C_1, and the left mandibular I_{1-2}. Calculus was observed on the lingual surface of the right mandibular PM_2, M_{1-2}, and left mandibular PM_{1-2}, M_{1-3}. Carious lesions were observed on the occlusal surface of the right mandibular M_{2-3} and left mandibular M_1 and M_3.

Hypertrophic osseous growth was noted on the right tibia shaft. Eburnation was visible on the superior sacrum. Schmorl's nodes were observed in the thoracic vertebrae.
Identification: There is no putative identification associated with Burial Lot 10735 at this time.
Strontium isotope ratios: 10735-19: 0.71119, 10735-17: 0.71092
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.6. Burial Lot 10735 is included within Category A.

Burial Lot: 10808
Coffin Lot: 10808
Associated Lot: None
Burial Description: The burial was defined by the stain of the grave shaft. No coffin wood remained but the stain of the wood was visible. The individual was supine and extended with head to the west and arms to the sides; the remains appeared to have shifted slightly due to taphonomic processes. Elements were recovered in situ. Excavations were made into the north wall to expose the left arm and left innominate, and into the south wall to expose the right arm and right innominate. Water damage was evident throughout the remains.
Coffin Lot Material Culture: One shoe heel fragment was recovered during excavation. One fired .357-caliber bullet was recovered from the cranium during analysis.
Osteological Description: Adult. The remains were in fair condition and moderately fragmented. All elements were recovered for this individual. The cranium was partially complete and fragmented throughout. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a male of European ancestry. An age range of young adult was estimated for this individual based on the condition of the auricular surface. Stature was estimated to be 66.38 ± 2.8 in. from the left femur length.

All maxillary teeth were present except the right I^1, C^1, M^{1-3}, and the left I^{1-2}. Enamel hypoplasia was visible on the right maxillary I^2, PM^{1-2}, and the left maxillary C^1, PM^{1-2}, and M^1. Calculus was observed on the labial and buccal surfaces of the right maxillary I^2, PM^{1-2}, and the left maxillary PM^{1-2} and M^{1-3}. All mandibular teeth were recovered for this individual. Enamel hypoplasia was visible on the labial and buccal surfaces of the right mandibular I_{1-2}, C_1, PM_{1-2}, M_{2-3}, and the left mandibular I_{1-2}, C_1, PM_{1-2}, and M_{1-2}. Calculus was visible on the lingual surface of all mandibular teeth. A carious lesion was observed on the occlusal surface of the left mandibular M_3. Seven loose teeth were recovered.

Hypertrophic osseous growth was observed on the sternum, a right rib, and in the left foot. Lytic lesions were visible exocranially on the frontal and endocranially on the frontal. Cribra orbitalia was visible cranially in the right orbit. Ankylosis was observed in the thoracic vertebrae. Schmorl's nodes were evident in the thoracic vertebrae. Osteophytic lipping was visible in the thoracic vertebrae and on the left patella. Periostitis was observed on the left distal femur shaft, right distal femur shaft, left proximal tibia shaft, and right proximal tibia shaft. An unhealed fracture to the left posterior parietal was observed. An unhealed gunshot fracture to the right frontal was observed.
Identification: There is no putative identification associated with Burial Lot 10808 at this time.
Strontium isotope ratios: 10808-30: 0.70887, 10808-32: 0.70888

Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.4. Burial Lot 10808 is included within Category A.

Burial Lot: 10809
Coffin Lot: 10809
Associated Lot: 11031, 11033
Burial Description: This burial was defined by the stain of the grave shaft. The coffin was poorly preserved with only small sections of the walls and base intact; the borders of the coffin were pulled back during excavation to expose bone. The coffin contained the mixed burial of Lots 10809, 11031, and 11033. Lot 10809 represents the primary individual from this burial. No formal positioning was observed for this individual. Elements were recovered in situ.
Coffin Lot Material Culture: One clear tonic bottle embossed on body with "Herman L. Emmerich Ph.G, Milwaukee", one fragmentary clear glass pipette, one amber supply bottle, one frosted flat glass fragment, and 2 unidentified glass fragments were recovered during excavation.
Osteological Description: Adult. The remains were in fair condition with light fragmentation; only the vertebrae, left humerus, left ulna, left radius, left hand, femora, tibiae, fibulae, and feet were recovered for this individual. The cranium was partially complete and fragmented throughout. Sex, age, ancestry, and stature were not observable for this individual due to size.

No maxillary teeth were recovered for this individual except the right I^{1-2}, C^{1}, PM^{1-2}, and M^{2}. Calculus was observed on the lingual, labial, and buccal sides of all present maxillary teeth. Carious lesions were observed in the occlusal surface of the right maxillary PM^{1-2} and M^{2}. No mandibular teeth were recovered for this individual except the left I_1 and right I_{1-2}, C_1, PM_{1-2}, and M_1. Calculus was observed on the lingual, labial, and buccal surfaces of all present mandibular teeth. Carious lesions were observed in the occlusal surface of the right mandibular PM_{1-2} and M_1.

A mastoid abscess was present in the left temporal. Slicing cuts to the right temporal and parietal were observed. A planar craniotomy affected the right zygomatic, right temporal, right parietal, and occipital; this was accompanied by vertical and horizontal severing cuts to the maxilla, right zygomatic, and anterior mandible. Overall, this individual was of an atypical small size.
Identification: There is no putative identification associated with Burial Lot 10809 at this time.
Strontium isotope ratios: 10809-30: 0.70949, 10809-2: 0.70946
Based on extant historical documentation and published human enamel $^{87}Sr/^{86}Sr$ ratios, this individual's natal region would be concordant with a location outlined in Table 6.5. Burial Lot 10809 is included within Category B.

Burial Lot: 10811
Coffin Lot: 10811
Associated Lot: 10955
Burial Description: This burial was defined by the stain of the grave shaft. The coffin was poorly preserved with almost no wood remaining intact. The coffin contained the mixed burial of Lots 10811 and 10955. Lot 10955 represents the secondary individual from this burial and was interred above and between the legs of the primary individual. The head was to the east for this

individual; no formal positioning was observed for the postcranial remains. Elements were recovered in situ. Desiccated brain tissue was recovered.
Coffin Lot Material Culture: One clear flat glass fragment, one unidentified clear glass fragment, and one fragmentary white plastic tube were recovered during excavation.
Osteological Description: Adult. The remains were in fair condition with light fragmentation; all elements were recovered for this individual. The cranium was complete and fragmented in the right zygomatic. The sexually dimorphic nonmetric and metric characteristics of this individual indicated a male of European ancestry. An age range of young adult was estimated for this individual based on the condition of the pubic symphyses, condition of the auricular surface, and cranial suture closure. Stature was estimated to be 73.67 ± 2.8 in. from the left femur length.

No maxillary teeth were recovered for this individual except the right PM^1 and left PM^1 and M^2. Calculus was observed on the lingual surface of the right maxillary PM^1 and the left maxillary PM^1 and M^2. A carious lesion was observed in the occlusal surface of the left maxillary M^2. Remodeled alveolus was observed in the area of the left maxillary M^1. No mandibular teeth were recovered for this individual except the right M_2 and the left PM_{1-2} and M_{1-2}. Calculus was observed on the lingual surface of all present mandibular teeth. Carious lesions were observed in the occlusal surface of all present mandibular teeth. Remodeled alveolus was observed in the area of the right mandibular M_1.

Lytic activity was observed on the L5 vertebra and sacrum. Cribra orbitalia was observed cranially in the left orbit. Schmorl's nodes were present in the thoracic and lumbar vertebrae. A mastoid abscess was observed in the left temporal. Severing cut marks to the right clavicle and left patella, and kerf cuts to the tibiae were observed. Unhealed trepanations were observed to the frontal and right parietal bones.
Identification: There is no putative identification associated with Burial Lot 10811 at this time.
Strontium isotope ratios: 10811-19: 0.71264, 10811-18: 0.71027
The $^{87}Sr/^{86}Sr$ ratio identified for the LM_1 falls within Table 6.7. The $^{87}Sr/^{86}Sr$ ratio identified for the LM_2 falls within the 0.0008 gap between Tables 6.5 and 6.6. The $^{87}Sr/^{86}Sr$ range proposed by Haverkort et al. (2008) for the Lake Baikal region of Siberia could potentially encompass both $^{87}Sr/^{86}Sr$ signatures within the same region. It is more likely that the difference between the $^{87}Sr/^{86}Sr$ ratios identified for this individual (0.0024) represents a shift in this individual's dietary isotope pool in late childhood/early adolescence or maternal residential mobility. Burial Lot 10811 is included within Category B.

Appendix B: Sample Lab Book Pages

Lot # 10343 Category A

[Left, Buccal; Right, Lingual: MCIG 2013-001 Lot # 10343 Teeth 14, 16]

NOTES:

Enamel Apatite Preparation

Carbide Drill Cleaned: _____ (date).

Cleaned: Sonicated _____ (date) for _____ minutes to clear.

Dessicated: _____ (date) at _____ (time) for _____ hours.

Diamond Drilled for enamel sample: _____ (date).

Into 2.363% NaOCl at _____(time) _____ (date).

Rinsed to neutral (4x) at _____ (time) to _____ (time)
_____ (date).

Into 0.1M acetic acid at _____ (time) _____ (date).

Rinsed to neutral (4x) at _____ (time) to _____ (time)
_____ (date).

Into freezer at _____ (time) _____ (date).

Into freeze dryer at _____ (time) _____ (date).

Removed from freeze dryer at _____ (time) _____ (date).

LOT # 10343

Tooth 14 (LM^1)	Tooth 16 (LM^3)
Sample + tube _____	Sample + tube _____
- empty tube _____	- empty tube _____
_____	_____
Sample weight _____	Sample weight _____
Add _____ ml acetic acid.	Add _____ ml acetic acid.
Apatite + Tube _____	Apatite + Tube _____
Final sample weight _____.	Final sample weight _____.
_____ (date) _____ (amount) removed for Sr sample.	_____ (date) _____ (amount) removed for Sr sample.
_____ % yield	_____ % yield
Sr sample label: 10343- 14	**Sr sample label: 10343- 16**

Strontium Ion Exchange Column Prep. Date: _____

Added 500 microliters of 3 N HNO_3 to each sample.

Added 0.3 ml of 3 N HNO_3 to each sample (3x).

Added 1 ml of 8 N HNO_3 to each sample (1x).

Added 0.3 ml of 3 N HNO_3 to each sample (1x).

Added 1 ml 0.05 N HNO_3 to each sample (drip into MC-ICP-MS vials for Sr collection).

Added 1 ml nano water to each sample (drip into MC-ICP-MS vials for Sr collection).

Added 2 ml nano water to each sample (drip into MC-ICP-MS vials for Sr collection).

End with vials prepped for Sr run on MC-ICP-MS.

MC-ICP-MS run date: _____

Appendix C: Sample Provenience Checklist Page

LOT# 10343 (Teeth 14, 16) Category A

[Buccal, MCIG 2013-001 Lot #10343 Teeth 14, 16]

[Lingual, MCIG 2013-001 Lot #10343 Teeth 14, 16]

Return checklist

Correct elements in bag?	
All bags present = element (any loose teeth?), matrix, calculus x2	
Post-sampling pictures completed	
Post-sampling pictures added to server	
Return elements to lot boxes. Remove rope tags, collect pull form. Any changes to element- fractures, fragments? Update original bag, inventory, and rescan inventory.	
Update taphonomy form to reflect washing of element and rescan.	
Add apatite vials (once collected), calculus, sampling to new form	

CURRICULUM VITAE

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Memberships in Learned or Honorary Societies

American Anthropological Association
American Association of University Professors
Phi Beta Kappa
Register of Professional Archaeologists
Society for American Archaeology
Society for Historical Archaeology

Publications

Freire, Shannon K.
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