FIFTY-THIRD AT THIRD

REPORT OF TEST EXCAVATIONS

for

Gerald D. Hines Interests

KEY PERSPECTIVES

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INTRODUCTION

The following report presents the results of archaeological trial excavations conducted in midtown Manhattan at the "53rd At Third" development site owned by Gerald D. Hines Interests and Sterling Equities, Inc. The trial excavations and this report were designed to fulfill the requirements of the New York City Landmarks Preservation Commission for Stage IB archaeological field testing within Manhattan Block 1327, Lots 1, 1/4, 1 1/2, 2, 3, 3 1/2, 4, 43, 44, 45, 46, 47, 48, 101 and 102 (See Plate 1). On the basis of this testing, Key Perspectives was able to recommend to the New York City Landmarks Preservation Commission on April 21, 1984 that no further archaeological testing or mitigation be required within the development site.

The "53rd At Third" site was initially selected for archaeological testing because a natural water course ran through the northeastern portion of the site (See Plate 2). Because stream courses provided natural routes through the hilly, woodland terrain of pre-development Manhattan, as well as providing essential and abundant food resources (cf. van der Donck 1968:55), the streams tended to be magnets for both prehistoric and early historic Colonial settlement. The water course, which is identified in early historic

period texts and maps as DeVoor's Mill Stream, flowed from the area now occupied by Central Park and exited into the East River at Turtle Bay. In 1871, the stream was channeled through a nine-foot sewer and thus no longer ran through the site.

A Stage IA documentary history for the development site was completed on March 8, 1984 (Rubinson et al. 1984) and on the basis of the Stage IA report, three backyard areas within the site were selected for trial excavations. Field work commenced on April 4th and continued for two and a half weeks, ending on Good Friday, April 20, 1984.[1]

The field excavations produced quantities of nineteenth century material, almost all of it from the second half of the century, as well as some early twentieth century material, and no evidence of prehistoric utilization of the site area.

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[1]Key Perspectives wishes to acknowledge the dedicated assistance provided by the members of the field crew, who worked long and well through one of the most rainy April's in New York's history. Principal investigator for the site was Dr. Frederick Winter, assisted by Dr. Karen Rubinson. Dr. Joan Geismar was a welcome advisor. Crew chiefs were T. Amorosi, J. Bigelow and M. Kodack. Crew members were A. Bankoff, C. Bergoffen, E. Blitman, A. Camissa, L. Eisenberg, C. Falotico, E. Gluck, D. Krumholz, J. Lerner, D. Mickle, T. Okuhara, A. Swidler, T. Tumminello, B. Withim.

TRENCH DESCRIPTIONS AND EXCAVATION RESULTS

Introduction and general field techniques:

On the basis of determinations made in the Stage IA Survey (p. 46), test trenches were excavated within three of the backyards on the development site. One trench was placed in the yard of Lot 1 1/4, one in the yard of Lot 4 and two in the yard of Lot 44 (See Plate 1).

The placement of these trenches in the undeveloped yards behind the buildings that had occupied the site since the late nineteenth century was deliberate. The primary objective of the trial excavations was to test the site for the presence of prehistoric remains, and the trench locations were selected to facilitate the deep testing of the site's original ground surface, while minimizing the potential disturbance resulting from the relatively recent construction of buildings on the site during historic times.

The trench placement also seemed optimal on the basis of the site's natural topography. The "53rd At Third" site had initially been identified as a possible place of prehistoric settlement and flagged for archaeological investigation because a stream, the DeVoor's Mill Stream, ran through the development area (See plate 2). This stream,

which is indicated on the city's nineteenth century building atlases and other maps, flowed through the northeastern portion of the site, cutting through Lots 44 1/2 [a.k.a. Lot 45], 46, 44 and 49 (cf. Bromley 1898) (See Plate 3). Thus, the two excavation trenches in Lot 44 (Trenches 3 and 4) were positioned to test the area adjacent to the stream's right or southwestern bank.

Core borings done at the site in anticipation of the current development project suggested that the course of the stream may not have always followed the lines depicted on the atlases. The surface of the bedrock within the project area dips sharply along a line approximately 24 meters southwest of the nineteenth century stream course (Meuser, Rutledge, Johnson and DeSimone 1983: Drawing C-1). The V-shaped dip parallels the eventual stream course, and it suggests that at some time in the past the stream ran along this more southerly channel. The excavation trench in Lot 4 (Trench 2) was positioned along the right "bank" of this putative earlier stream course, while the trench in Lot 1 1/4 (Trench 1) was situated to test the higher ground above and to the south of the channel.

The modern living surface within each of the yard areas was set approximately 3 meters below the current street grade. This accords with the practice, begun in the mid-nineteenth century, of digging out the gardens and backyards of buildings so as to place them on the same

level as the basement (Lockwood 1972: 19). By the time the Stage IA Survey was prepared in February-March 1984, the yards in Lots 1 1/4 and 4 had been completely filled to grade level with rubble deposited when the buildings on the site were demolished in anticipation of the current construction project. The yard of Lot 44 held similar debris, although a strip along the southern border of the yard where three trees were standing contained only approximately one meter of rubble.

The demolition debris was mechanically cleared from each yard using either a solo Dynahoe 190 backhoe or a backhoe working in combination with a front-end loader. The backhoe was also used to remove the stone paving slabs that covered the ground surface in the yards of Lots 1 1/4 and 4. When the mechanical clearing was completed, excavation trenches were laid out in the yards. The trenches were oriented north-south along the lines of the city grid which had been used to establish the orientation of the buildings that had previously stood on the site. The horizontal dimensions of the trenches were 2 by 2 meters with the exception of the trench in Lot 4 which, because of the small size of the undeveloped yard, was 2 meters north-south by only 1.75 meters east-west. In the trenches located within Lots 1 1/4 and 4, all excavation was conducted by hand, using large and small digging picks, trowels, shovels and other appropriate small tools. In the two trenches

that were dug in Lot 44, the upper strata were excavated by hand while the lower fill deposits were excavated by the backhoe. All of the trenches were excavated below the level of the native or natural sterile ground surface. Samples consisting of all or of a standardized proportion of the earths excavated from each stratum were sieved through quarter-inch wire mesh in order to aid in the recovery of artifactual and ecofactual materials.

Trench 1 in Lot 1 1/2:

Lot 1 1/4 faces onto 53rd Street, and Trench 1 was positioned near the eastern side of the undeveloped yard that was located in the rear or northern portion of the lot (See Plate 1). The front or southern portion of the lot was first developed between 1854 and 1867, and by 1890 according to that year's Bromley atlas, a three story brick structure had been built on this front part of the lot. There is some question regarding the accuracy of the atlas, since the city's building records indicated that the lot was occupied by a one story laundry as recently as 1909. However, regardless of when it was built, a three story building was standing on the lot at the time of demolition for the current construction project (for the lot and building history, see the Stage IA Survey: 18f. and 22).

The three story brick building on the front portion of Lot 1 1/4 had a semi-subterranean basement that was used for commercial purposes. An entrance leading from this basement to the yard had been sealed with brick-work at an unspecified date prior to the commencement of the excavations. In 1936, the basement was described in the city's building records as a "vacant printer's shop." At the time of the site demolition, the basement was occupied by a messenger service. Residential apartments were located in the upper floors of the building.

Lot 1 1/4 was originally included in the block's Lot 1, which continued to designate the southwest corner of the block after Lots 1 1/4 and its eastern neighbor, Lot 1 1/2, were separated from the original unit. Because of the discrepancies between the published atlases and the city's building records, the exact date of this separation cannot be determined, and it is possible that the separation did not take place until after 1909. Questions concerning the history of Lot 1 and the other lots surrounding the yard of Lot 1 1/4 are significant because they may help reveal the sources of the materials found in the excavations within the yard.

In 1909, George McGovern, the owner of the building that stood on the ground identified as Lot 1 in the later twentieth century records of the block, requested permission to construct a saloon in the ground floor of the four-story brick building that occupied the lot. At that time, the second story of the building held furnished rooms, and the third and fourth stories held two residential apartments each. In addition to serving as a residence and saloon, the building on Lot 1 was occupied during its later years by a cigaret shop, a delicatessan and a dress store (for the lot and building history, see the Stage IA Survey: 21).

Along the eastern side of the building, inside the wall that ran along the boundry with Lot 1 1/4, there was a hallway. This hall opened through a door on its south

onto 53rd Street. There was open shaftway at the northeast corner of Lot 1, oriented along the line of the hallway within the building. In recent times, access between the shaftway and the yard of Lot 1 1/4 was via a narrow passage approximately .3 meters wide and .75 meters long. The south wall of this passage was formed by the building that stood on Lot 1 1/4. The north wall of the passage was the extension constructed onto the building that stood on the block's Lot 2. Prior to the construction of this extension on Lot 2, the shaftway would have been open and readily accessible to the yard of Lot 1 1/4. Unfortunately, the city's building records are not clear as to when this extension was constructed. It may have been in place as early as 1905 or, alternatively, it may not have been erected until 1940.

It is not known whether there was a door or window leading from the hallway in the building on Lot 1, or from the Lot 1 building's basement beneath the hall, to the shaftway and the yard of Lot 1 1/4. According to plans filed with the city in 1909, the western half of the shaftway was occupied by a water closet designed to serve the proposed Lot 1 saloon. The water closet was a single-storied addition to the Lot 1 building. Certainly, during its construction, access would have been available between the interior of the Lot 1 building and the shaftway. Construction plans indicate that the water closet had a window opening onto

the shaftway, but it does not seem at all likely that this sort of an opening would have been used to provide access to the shaftway under normal circumstances. The water closet is present on building plans dating as late as the 1930's.

On its eastern side, the yard of Lot 1 1/4 was bordered by an extension built between 1950 and 1981 onto the rear of the three story building that stood on Lot 1 1/2. The building on Lot 1 1/2 was similar in form and may therefore be presumed to be contemporaneous with the building on Lot 1 1/4. No building records could be located for Lot 1 1/2 and so it is not known what commercial enterprises occupied its semi-subterranean basement in the earlier years of the building's life. Immediately prior to its demolition for the current construction project, the basement held a plant shop (for the lot and building history, see the Stage IA Survey: 23).

On its north and east, the yard of Lot 1 1/4 was bordered by extensions built onto the structure that occupied the western portions of Lot 2 (for lot and building history, see Stage IA Survey: 24f.). The city's building records are not clear as to the date when these extensions were constructed. The extension along the western side of the yard may have been in place by 1905, but some records suggest that the extension of the Lot 2 building that borders the west and north sides of the yard in Lot 1 1/4 was not con-

structed until 1940. Lot 2 held a typical four story brick building, with apartments in the upper stories and commercial space at ground level. This building was in place by 1874. By 1940 and continuing on into the 1960's, the ground level commercial space was occupied by a restaurant. At the time of demolition, the building was occupied by a card and gift store. Earlier tenants are not known.

During the late nineteenth and early twentieth centuries, before the construction of the building extensions that eventually covered most of the block's rear yards, the yard of Lot 1 1/4 theoretically could have provided access to the entire block running all the way east to Second Avenue (cf. 1898 Bromley atlas = Stage IA Survey: Pl. 5) (See Plate 3). However, considering the long-standing propensity of New Yorkers to provide their yards and thus themselves with some modicum of privacy and protection through the construction of lot-line fences and other similar barriers (cf. Lockwood 1972: 184f.), it seems reasonable to suppose that the yard of Lot 1 1/4 would not normally have provided a direct connection or, perhaps more significantly from an archaeological perspective, a dumping space for any but its most immediate neighbors in Lots 1, 1 1/2 and 2. Analysis of the artifacts recovered in the excavations revealed only one possible association with the surrounding buildings. The ceramic deposit in Trench 1, excavation units 01-31, -34, -35, contained heavy china of types that

might be associated with the bar/restaurant on Lot 1.

All of the buildings surrounding the yard of Lot 1 1/4 had been demolished prior to the commencement of archaeological investigations on the site, and the yard, which was set approximately 3 meters below the modern street level, had been filled with rubble from the demolished structures. Thus, the first task of the archaeological excavations was to remove this recently deposited rubble from the yard area and clear the yard down to its original living surface. This was accomplished on the morning of 4 April with the use of a Dynahoe 190 backhoe.

The rubble filling the yard consisted mainly of bricks, some mortared into clumps and others individual, combined with other architectural debris. Stamped bricks found in the rubble from the Lot 1 1/4 yard bore the imprints HUTTON, ROSE, TERRY BROS. and TRI-CO. It was not possible to determine whether these bricks came from the building that had occupied Lot 1 1/4 or from one of its neighbors.

Near the base of the rubble, just above the yard surface, large segments of a metal fire-escape were unearthed. Presumably, this exterior feature was deposited before the rear building walls were demolished. Mixed with the lowest courese of rubble were quantities of tar paper that would have served as roofing on the demolished building.

One noteworthy piece of equipment was discovered amongst the rubble in the yard. A large, over-2-meter long mechanism

consisting of various gears and flywheels was exhumed from the rubble. Although its state of preservation was too poor to allow for certain identification, it may be recalled that the basement of the Lot 1 1/4 building served at one time as a printer's shop, and the geared mechanism did not seem incompatible with the kind of equipment that might been found in such an establishment.

The floor of the yard consisted of a flagstone paving. The gray slate flags ranged to over a meter in length and 0.05 meters in thickness. The covering rubble and paving was removed from the eastern half of the yard only. Towards the west, the rubble was formed into a ramp to allow access into the yard.

The wall enclosing the yard on its north consisted of coursed cinder blocks, preserved to a height of four or five courses. These cinderblocks were part of the wall of the extension that was built in 1940 onto the building that stood on Lot 2. To the east, the yard of Lot 1 1/4 was enclosed by a wall of wood planking that rested on a footing course of wooden beams (See Plate 4). This footing course, in turn, rested on the easternmost of the flagstone paving slabs within the yard. The planking of the wall covered a packing of rubble. Near the wall's southern corner, the rubble was supported by coursed mortar, brick and schist blocks. This eastern wall of the yard was a wall of the extension that was constructed onto the back

of the building on Lot 1 1/2 between 1950 and 1981.

To the south of the yard in Lot 1 1/4, a combination of polygonal schist blocks and coursed brick formed the rear basement wall of the building that had stood on the front portion of the lot (See Plate 5). As noted above, there was a bricked up window or small door set in this wall, which would have at some time in the past provided access between the building and its yard (See Plate 6).

After the rubble debris and paving slabs were cleared, a 2 by 2 meter excavation trench was marked out in the eastern portion of the yard. The ground surface of the trench beneath the flagstone paving ranged in elevation from 8.63 to 8.71 meters above sea level.[2] Constant drizzle on 4 April, the day when the upper rubble was cleared from the yard, and torrential rains on 5 April left the uppermost earth within the trench saturated with water, and on 6 April it was necessary to bail out the trench before excavations could begin. The upper centimeters of earth in the trench were disturbed not only by the rain and the bailing operation, but also by the backhoe's removal of the flagstone paving. Relatively dry and undisturbed soils were not encountered until 9 April when, at a depth 0.15 meters below the original surface of the trench, the first features appeared.

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[2]Department of Highways, Borough of Manhattan standard. This standard is 2.75 feet or approximately 0.84 meters above the U.S. Coast and Geodetic Survey datum of mean sea level at *Sandy Hook*.

These features consisted of two small constructions that were tentatively identified as drainage sumps, one located in the center of the trench and the other cut by its eastern scarp. Clearly, the archaeologists excavating the trench were not the first people to have to cope with excess water in the yard of Lot 1 1/4.

The first feature [excavation units 01-3, -4, -5 and -15] was positioned in the center of the trench, and it was smaller, shallower and less clearly designed to serve as a drainage sump than its eastern neighbor (See Plate 7). The feature was initially encountered at an elevation of 8.49 meters. It consisted of a coarse, yellow terracotta box that was open at the top and closed at its bottom by a slate slab on which the box sat. The box was skewed about 15 degrees from the orientation of the yard. The sidewall of the box measured 0.38 meters north-south by 0.48 meters east-west. The slate slab on which it rested measured 0.5 by 0.6 by 0.06 meters. There was a stone packing around the upper portions of the box. This packing consisted of slate and schist slabs laid without mortar. The packing enlarged the feature's horizontal dimensions by between 0.15 and 0.25 meters on each side. The box was 0.27 to 0.29 meters deep.

The box was filled with a very fine black silt that was described by its excavator as being "almost oily" in texture. This soil was clearly distinct from the brown,

sandy silt that was present in the rest of the trench. Mixed in with this soil were limited quantities of artifacts. These materials tended to be small in size, and they reflected the normal range of artifacts that might be expected in a relatively recent historic context (e.g. ceramics, glass, wood fragments). Included among the artifacts were three crockery marbles of the brown glazed type commonly know as "Bennington's." Production of this type of marble is not thought to have begun before 1842. The terminal date for the production of the type is not known, but it does not seem likely that they continued to be manufactured after World War I (cf. Randall 1971: 103f.).

It is unfortunate that the soil disturbances that resulted both from the backhoe's removal of the yard paving and the rain's disruption of the upper sub-paving soil levels made it impossible to precisely define the relationship between the ceramic box and the flagstone paving that covered the yard. Was the box designed to serve the yard in conjunction with the paving, or did the box represent a pre-paving phase in the yard's history? In this context, it is perhaps noteworthy that the floor of the building extension that covered the former yard in the adjacent Lot 1 1/2 was described on the 1981/1983 site demolition plan as consisting of earth. Since it seems unlikely that the builders of the extension would have gone to the trouble of removing a flagstone paving which would have made a suitable floor,

it may be assumed that the original yard in Lot 1 1/2 would have been of earth. This increases that probability that the original yard in the neighboring property, Lot 1 1/4, consisted of the same material.

The precise function for which the ceramic box was designed is also uncertain. While the fine black silt that filled the box makes it clear that it served as a drainage sump, collecting water, soot and other materials from the yard, this is not likely to have been the box's primary purpose. There was no drain outlet through which water could exit the box, as there was on the sump-drains excavated in the yards of Lots 4 and 44, and the four-sided ceramic box in Trench 1 fit snugly onto its underlying stone slab, so that water drained only slowly from the container. This was tested by experiment over the night of 11 to 12 April. The box was filled with water at the close of work on the afternoon of the 11th, and it was found to still contain most of the liquid the following morning. Whatever its function, it must be noted that the box was constructed with care, and its ceramic interior was neatly packed in by the schist and slate rocks that were positioned around its top.

The identification of the second feature as a sump that was designed primarily to provide drainage is considerably more certain, since similar drainage sumps are known from a number of excavations in lower Manhattan (Arnold Pickman,

personal communication).

This second sump consisted of a cylinder that was made up of schist blocks and a few fragmentary bricks, and that was filled with dark grayish brown silt [excavation units 01-10, -22, -23, -24, -26 and -27] (See Plate 8). As noted above, this feature extended into the eastern scarp of the trench.

The interior diameter of the cylindrical sump was approximately 0.45 meters and its walls were approximately 0.2 meters thick. The uppermost preserved course of the stone walls from this feature was encountered at an elevation of 8.43 meters, six centimeters below the top level of the ceramic box, but the dark grayish brown silt from the interior of the second sump was visible in the trench scarp rising above the stone walls to the surface level of the trench, where it sat immediately under the yard's flagstone paving. The bottom of the sump was marked by an approximately 0.2 meter thick platform of light brown clay which underlay the darker silt from the interior of the feature and its stone walls. The total depth of the interior of the sump was approximately 1.15 meters.

A limited quantity of fragmentary artifacts was mixed in the silt inside the sump. These artifacts tended to be small in size, and they appear to reflect a gradual accumulation of dirt, soot, silt and other materials that were washed into the feature with the water that the sump

was designed to absorb. In contrast, had the sump been deliberately filled in a single episode, a greater quantity of artifactual material in considerably larger fragments, and a proportionally reduced quantity of silt would have been expected to be present. The artifacts from the sump are compatible with a late nineteenth to early twentieth century date.

The second sump cut through, and was partially undercut by, an appproximately 0.3 meter thick deposit of oyster shells that covered the southern half of the trench [excavation units 01-25A and -25B, -29 and -31]. A very limited number of clam shells were mixed in amongst the oysters. This shell stratum tapered off towards the north, where it abutted against a layer of stone cobbles in the northwest of the trench [excavation units 01-28, -30 and -33], and a layer of earth mixed with dark red brick-dust in the northeast [excavation unit 01-32].

Removal of the oyster shell level revealed that the cobbles continued to extend towards the south under the shell stratum. Beneath the cobbles, there was a layer of earth and cinders that contained an unusually large quantity of ceramics [excavation units 01-34 and -35], and underneath the pottery-filled cinder layer there was another layer of brick-dust similar to the material that had been encountered previously in the northeastern quadrant of the trench [excavation unit 01-36]. Joins between sherds

found in excavation units 01-28, -29, -30, -31, -33, -34 and -35 (unit 01-32, the brick-dust in the northeast, did not contain any ceramics), indicate that the deposition of the oyster shells, the cobbles and the ceramic-cinder mix were contemporaneous and, presumably, part of a single filling episode.

With one exception, the pottery from this deposit was of nineteenth century manufacture. Some fine decorated wares were included amongst this material, including a fragmentary blue transfer-print vegetable bowl made between 1830 and 1860 (See Plate 9a and b), but most of the ceramics consisted of plain whiteware bowls, cups (See Plate 9c) and plates (See Plate 9d) in types dating after 1840. Other notable nineteenth century ceramics from the deposit were a fragmentary, mottled brown-glazed Rockingham teapot, a gray saltglazed stoneware jug (See Plate 10a), and wave--patterned and band-decorated whiteware bowls (See Plate 10 b and c). The latest ceramic fragment from the deposit was a granite china base dating approximately to the 1890's. The only piece of pre-nineteenth century pottery from the deposit was a base segment from a buff stoneware mug that was manufactured between 1700 and 1775. This plain mug would probably best be characterized as a "survivor," rather than as an "heirloom," and its presence in a late nineteenth century deposit requires no additional explanation.

The underlying stratum of brick-dust may have been

deposited when the brick structures were being constructed on the site during the late nineteenth century, and the ceramics, cobble and shell layers may reflect not only an attempt to dispose of some unwanted trash but also an effort to provide the yard with a drainage stratum. It was into this stratum that the cylindrical sump fed.

The bottom of the brick-dust layer was encountered at an elevation of between 7.33 and 7.5 meters. Underlying the brick-dust was a stratum of brown, micaceous sandy silt. This silt contained only limited quantities of historic period ceramics and occasional small chips of coal [excavation units 01-38, -39, and -40]. Apparently, this stratum was a relatively clean leveling fill, added to the site prior to construction. This fill ranged in thickness up to 0.5 meters. Beneath it, the subsoil appeared. The uppermost tip of the subsoil was encountered at an elevation of 7.11 meters. This culturally sterile level consisted of a compact, sandy, reddish-yellow silt. The subsoil was tested by excavations to an elevation of approximately 6.9 meters. Further testing with a hand corer revealed that this silty soil continued for another approximately 0.8 meters, where it overlay a more compact, reddish-yellow sandy clay that was of sufficient density so as to preclude further coring.

Trench 2 in Lot 4:

Trench 2 was positioned in a narrow undeveloped yard in the center of Lot 4 (See Plate 1). As noted above (p. 4), this yard was situated just slightly to the south of a V-shaped dip in the bedrock that may mark an early course of the historically documented DeVoor's Mill Stream.

A five-story old-law brick tenement had been constructed on the western half of Lot 4 by the 1890's. The building stood directly to the west of the preserved yard within the lot and it fronted on Third Avenue (for the lot and building history, see Stage IA Survey: 29f.). The exact date of the construction for this building is not recorded in the city's building records. Buildings on adjacent lots were in place by the 1870's (cf. Lot 3, to the south: 1874; Lot 48, directly to the north: 1877. See Stage IA Survey: 26 and 40), and it seems reasonable to assume that the tenement on Lot 4 was erected at approximately the same time. It was built before 1885 in any case, if the Robinson Atlas of that year is accurate. This building was still standing on the lot at the time of demolition for the current development project.

The building on Lot 4 had residential apartments above the street level and commercial space on its ground floor. The identity of the tenants who occupied the commercial space during the building's early years is not known.

By 1943, the ground floor had been connected to the ground floors of the adjacent buildings in Lots 2, 3, and 3 1/2 to form a large sea food restaurant. A concrete and brick extension was added onto the rear of Lots 3, 3 1/2, and 4 in the same year as this interlinking of the buildings on Lots 2 through 4. This extension took up all of the yard space in Lots 3, 3 1/2 and 4 with the exception of the narrow yard segment in Lot 4 on which Trench 2 was located (for lot and building histories of Lots 2 through 3 1/2, see Stage IA Survey: 24-28).

Both the tenement building on Lot 4 and the extension that covered the rear of Lots 3, 3 1/2 and 4 had cellars, and the city's building records as well as the developer's demolition plans indicate that the floors of these cellars were positioned at approximately the same level as the surface of the yard in Lot 4.[3] According to the city's building records, there was a window in the cellar of the building on Lot 4 that looked out onto the yard.

The city's buliding records indicate that the kitchen and storage facilities for the restaurant that was present in Lots 2 through 4 by 1943 were located in the cellar of Lot 3. Considering the fragmentary nature of the city's

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[3]A building record dated 1916 notes that the cellar floor in Lot 4 was three inches (approximately 0.076 meters) lower than the yard level; the demolition plan gives the yard elevation as 25.54 feet or 7.81 meters, 6/100's of an inch (approximately 0.0015 meters) below the depth indicated for the cellar.

records, and the tendency of these records to subsume information dealing with adjacent and interlinked lots under a single lot heading, it is entirely possible that these facilities extended into the cellars of Lots 3 1/2 and 4 as well.

Immediately to the north of Lot 4 was Lot 48 (for lot and building history, see Stage IA Survey: 40f.). A four-story brick building had been constructed on the western half of this lot before 1877, the year when a two-story extension was added to the building's rear. This extension cut the yard of Lot 4 off from access to the north. On its east, the nineteenth century yard of Lot 4 faced onto the yard of Lot 5 and thence onto a series of open yards extending all the way to Second Avenue. As noted above (p. 11), it seems reasonable to assume that access through these rear yards would have been restricted by fences or other similar barriers.

All of the buildings within the development project area surrounding the yard of Lot 4 had been demolished prior to the commencement of the archaeological excavations, and the yard, which was surfaced at a level approximately 2.5 meters below the modern sidewalk grade, had been filled with rubble from the demolished structures. This rubble was removed from the yard on the afternoon of 4 April with the use of a Dynahoe 190 backhoe.

The rubble filling above the yard surface was similar

in character to the fill that was encountered in the clearing of the yard in Lot 1 1/4. It consisted of a combination of bricks mixed with lesser quantities of other architectural debris. More varieties of stamped bricks were found in the yard of Lot 4 than had been discovered in the yard of Lot 1 1/4, and bricks in Lot 4 were found with the imprints HUTTON, ROSE, TERRY BROS. (these three imprints had also been found in Lot 1 1/4), S.S.B.CO., BB, SCHULTZ,]OLDRIC... and]CHAM. As was the case in Lot 1 1/4, it was not possible to determine with certainty whether these bricks had originated in the building that had stood on the front half of Lot 4, or whether they had come from neighboring structures. Again, as was the case in Lot 1 1/4, portions of a fire escape were encountered in the lowest layer of rubble, just above the yard surface. The only other object of note found in the rubble was a large, approximately 2 meter long, green-painted metal water tank or boiler.

The yard surface in Lot 4 was covered with multiple layers of slate and concrete, indicating a number of paving episodes (See Plate 11). The ground directly beneath the paving was stained soot-black on top, and this, combined with an 0.05 meter thick layer of pea-sized coal fragments that was found on the ground surface along the eastern side of the yard, suggested that the yard surface had been exposed for at least a few years while the buildings in the vicinity were occupied and before the paving was put

in position. The nineteenth century pottery fragments found amongst the coal [excavation unit 02-1] are compatible with a date for this exposed yard surface around the time when the historical sources indicate that the buildings on the site were first being constructed.

Above the coal and soot layer there was a flagstone paving that consisted of between one and three layers of slate slabs. These slabs were similar in form to the slabs that had covered the ground surface in the yard of Lot 1 1/4. No debris was found between the slate paving layers in the yard of Lot 4, and it is thus probable that this 0.10 to 0.15 meter thick paving represents a single phase in the yard's history. A layer of concrete approximately 0.10 meters thick was positioned above the flagstone paving. Along the eastern side of the yard, this concrete was covered by the rubble from the recent site demolition. In the southwest, the paving was covered by a second layer of concrete situated approximately 0.20 meters above the lower concrete paving. A 1 1/2 inch diameter iron pipe that was surrounded by asbestos insulation ran in the space between the two layers of concrete. The pipe was positioned close to the rear wall of the building that had stood on the front half of Lot 4, and it jogged to pass through the brickwork of the wall and entered the building approximately one meter north of the south side of the yard.

The southern side of the yard held the lower courses

of a brick chimney. The chimney, which was approximately 1.2 meters wide, sat atop the slate paving. The layers of concrete paving had been added to the yard after the construction of the chimney; this was apparent from the fact that the edges of the concrete floors had been moulded to accommodate the presence of the already existing chimney. On the chimney's west, where it stood approximately 0.4 meters from the rear wall of the Lot 4 building, a modern J & B Whiskey bottle with an aluminum screw-top cap was found wedged between the two layers of concrete in the space that also held the insulated pipe. This bottle was pressed against the side of the chimney, and it was impossible to determine whether the bottle had been put in place at the time when the upper layer of concrete was laid, or whether it was positioned between the two layers of concrete at a later date, perhaps at a time when the floor, pipe or chimney was being repaired.

The northern side of the yard in Lot 4 was not fully cleared; the rubble on this side was formed into a ramp to provide access to the yard surface and excavation trench. On the west, as many as twenty-two courses of the brick that had formed the rear wall of the original tenement in Lot 4 were preserved. A door or ground level window was cut through the wall approximately 2.0 meters north of the southern side of the yard. The building within the door/window frame was filled with rubble and could

not be investigated. On the east, the border of the yard was marked by a wall that consisted of brick in the south and cinder blocks towards the north. The brick was preserved to a height of 14 courses and the cinder blocks stood to 5 courses. The two building materials were bonded together and they sat atop the lower concrete paving of the yard. The cinder block section of the wall was set back abruptly approximately 4.2 meters north of the southern side of the yard, near the limit of the portion of the yard that had been cleared by the backhoe. At one time this setback may have marked the position of a door or window in the wall of the brick and cinder block extension that was built onto the rear of the structures in Lots 3, 3 1/2 and 4 in 1943; by the time of demolition for the current construction project, however, the opening had been filled in with cinder blocks.

After the backhoe had cleared the rubble building debris and the various layers of paving from the yard area, an excavation trench was marked out in the southern portion of the yard. The trench measured 2.0 meters from north to south, but only 1.75 meters from east to west due to the narrowness of the yard. Following the excavation of the upper approximately 0.35 meters of deposit, the trench was set back and only the southern meter was excavated. The surface of the trench under the flagstone paving ranged in elevation from 7.74 to 7.81 meters (See Plate 12).

The eastern third of the trench's surface was marked by a shallow, 0.05 meter thick, layer of pea-sized coal chips while the remainder of the soil in the trench consisted of a yellowish, sandy clay. This sandy clay was soot-stained on its upper surface. Excavation revealed that it underlay the coal chips along the east, and eventually the sandy clay resolved into a 1.3 to 1.6 meter thick layer of fill, the uppermost of the slightly more than 2.0 meters of fill that made up the cultural deposits in above the natural, culturally sterile Manhattan land surface in Trench 2.

Only one feature was encountered in the excavations of Trench 2: a combined drain and brick sump that was found directly beneath the flagstone paving in the northwestern section of the trench (See Plate 13.). The sump consisted of an approximately 0.2 by 0.3 by 0.25 meter deep rectangular settling box that was made up of mortared bricks and squared schist blocks. A perforated iron drain cover sat atop the opening to the sump. An approximately 0.1 meter diameter iron drain pipe ran from the sump towards the west, exiting from the trench just below the trench's northwest corner. Presumably, the iron pipe continued to run towards the west beyond the edge of the trench, where it would have passed under the rear wall of the building in Lot 4 and connected to the building's drainage system. The sump contained fine black, silty soil, similar in color and texture to the soil found in the clay box in Trench 1.

One small fragment of clear window glass and some additional fragments of coal and wood were the only materials recovered from within the sump. Fragments of nineteenth century ironstone ceramics, as well as white ware and red ware pottery sherds, were recovered from the builder's trench in which the pipe was set. This type of drain and sump was relatively common in the yards of New York's nineteenth century brownstone and brick buildings, and a nearly identical feature was discovered in Trench 4.

The fill deposit in Trench 2 consisted mainly of two thick layers of yellowish, sandy clay. As noted above, the uppermost layer underlay the flagstone paving and was between 1.3 and 1.6 meters thick [excavation units 02-2, -4, -6, -8, -10, -11 and -12] (See Plate 12). The ceramics from this fill consisted of small, disjointed fragments from typical mid-to-late nineteenth-century wares, a characterization that could be applied with equal accuracy to all of the pottery recovered from the Trench 2 fill strata. An approximately 0.2 meter thick layer of redder, more firmly packed soil that contained a number of water-washed quartzite and schist pebbles was found beneath the upper sandy clay fill [excavation units 02-13 and -14]. Underlying this compact soil on the eastern side of the trench was a thin, approximately 0.07 meter thick layer of ash and coal clinker [excavation unit 02-15]. This material, in turn, sat atop another relatively thick stratum of yellowish,

sandy clay that extended between 0.35 and 0.5 meters below the ash and clinker deposit. This lower fill of sandy clay [excavation units 02-16 and -17] was distinguishable from the upper layer of sandy clay by the fact that it had fewer artifacts mixed in with the soil matrix. A second deposit of ash and coal clinker, again limited to the eastern side of the trench and again relatively shallow, a maximum of 0.11 meters in thickness, underlay the sandy clay [excavation unit 02-18]. An approximately 0.15 meter thick layer of gray, loosely packed silty earth was the final stratum above the culturally sterile subsoil. The subsoil consisted of a reddish-yellow sandy clay; its surface was mottled with small dark circular patches which marked the former locations of roots or worm holes in the old Manhattan land surface. Two large field stones, between 0.5 and 0.6 meters long and 0.3 to 0.4 meters wide, were set into the top of the subsoil.

The subsoil tended to dip towards the east, where its top was encountered at an elevation of 5.7 meters. It was of course impossible within the limited confines of the trench to determine whether this dip was merely a local feature, or whether it represented an actual incline and significant feature in the original land surface. In this context, it may be recalled that the V-shaped dip in the bedrock that may mark the line of an early stream course within the site area was situated just to the northeast

of Trench 2, in the direction of the downward inclination of the subsoil's surface.

The excavations in Trench 2 were carried down an additional 0.3 meters in the eastern half of the trench to reveal a slightly lighter colored sandy subsoil stratum beneath the inital sterile layer. On the western side of the trench, further excavation was precluded by the presence of a volatile, petroleum-based liquid that had begun to seep out of the trench wall at an elevation of approximately 6.0 meters. This liquid was probably leakage from the fuel tanks that had been built into the basement of the post office garage on 54th Street and Third Avenue, directly to the north of the development site.

Trenches 3 and 4 in Lot 44:

Trenches 3 and 4 were excavated in the large, undeveloped yard in the southern half of Lot 44 (See Plate 1). Trench 3 was positioned near the southeastern corner of the yard while Trench 4 was located in the yard's northwest, overlapping a narrow, undeveloped strip that ran along the rear or eastern edge of Lots 46, 47 and 48. The two excavation trenches were located approximately 7 meters southwest of the course of DeVoor's Mill Stream, according to the stream's course as indicated on late nineteenth century land atlases (cf. Bromley 1898) (See Plates 2 and 3).

Lot 44 held a four story brick building (for lot and building history, see Stage IA Survey: 33). The building covered only the front or northern half of the 100-foot lot which faced onto 54th Street. The date of the building's construction is not known, although it most probably fell sometime during the 1860's or 1870's. The brick structure on Lot 43 directly to the east was constructed in 1878, and all of the similar brick structures within the development site for which construction dates are known were erected between 1860 and 1880 (see Stage IA Survey: 18-41).

The building on Lot 44 had a cellar that was still floored with wood at the time of demolition for the current construction project. The elevation of the cellar floor was 8.14 meters. Above the cellar, the basement and first

floor were used by commercial tenants while the upper stories held residential apartments. The city's building records do not identify any of the building's former tenants, nor do the records specify the types of stores or commercial establishments that occupied the lower floors of the structure.

At the time of demolition for the current construction project, Lot 43, situated immediately to the east of Lot 44, was occupied by a five-story brick building that had a one-story extension on its rear or south (for lot and building history, see Stage IA Survey: 31f.). The lintel of the five-story building in Lot 43 was boldly inscribed 1878, clearly an indication that the building was erected in that year. City atlases from as early as the 1890's show Lot 43 as fully developed, thus providing a terminus ante quem for the construction of the extension at the rear of the lot. The early tenants of the building in lot 43 are not known. An 1885 atlas lists Lot 43 as being part of a brewery that occupied the central part of the block facing onto 54th Street. Although it was not a manufacturing building, the Lot 43 building may have held offices or residences attached to the brewery.

To the west of Lot 44, the lot's yard bordered on the rear of Lots 47 and 49 (for lot and building histories, see Stage IA Survey: 39-41). Identical four-story brick buildings occupied the front or western portions of these two lots. Extensions were added to the rear of the lots

in 1876-77, leaving an approximately 1.5 meter (5 foot) undeveloped strip between these building extensions and the yard of Lot 44. At the time of demolition for the current construction project, the narrow undeveloped strip in Lots 47 and 48 was separated from the yard of Lot 44 by a low, approximately 0.15 meter (6 inch), concrete barrier.

Initially, the buildings in Lots 47 and 48 held residential apartments in their upper stories and stores on the street level. By 1884, the two buildings were connected to produce an enlarged furniture store, and sometime between 1884 and 1891, the last residential tenants were moved from the buildings and the entire structure was used as a furniture store and showroom. In 1922, part of the dual facility had become a restaurant, and at the time of demolition the ground floor of the building in Lot 48 was a tavern and the ground floor of Lot 47 was occupied by a donut shop.

The undeveloped strip that ran along the back of Lots 47 and 48 continued to the north where a similar undeveloped strip ran along the rear of Lot 46 (for lot and building history, see Stage IA Survey: 37f). The initial brick structure in Lot 46 was constructed between 1876 and 1881. It had a rear extension that was added by 1890. In 1885, the commercial space in Lot 46 was occupied by the same furniture store that occupied Lots 47 and 48. Residential apartments were located in the building's upper

stories. By 1970, a restaurant occupied the building's ground floor.

Among Lot 44's nineteenth century neighbors and near neighbors was a large, multiple-lot brewery located at mid-block to the east of Lot 44 along 54th Street. The 1898 Bromley atlas shows the brewery occupying Lots 37 through 42, a row of buildings that begins one lot (or approximately 7.6 meters [25 feet]) east of Lot 44. Robinson's atlas of 1885 showed the brewery as also occupying Lot 43, immediately adjacent to Lot 44. In this context, it is noteworthy that the lintel of the building on Lot 43 was inscribed with the date 1878 and the name J. Hoffman, presumably the owner of the brewery which was called the Hoffman Oriental Brewery. The building on Lot 43 was a typical five story mixed commercial and residential structure. It is clearly not a brewery itself, but it may have served as office space for the brewery or as a residence for its workers, if only prior to 1898. However, none of the finds from the excavations in the yard of Lot 44 would seem to single out the yard as every having served as a disposal site for an adjacent brewing establishment.

To its south, the yard of Lot 44 faced onto the rear yards of Lots 5 and 6. During the 19th and early 20th centuries, the undeveloped yards in the rear of these lots were part of a line of back yards that extended east all the way to Second Avenue. As noted above (p. 11), it seems

reasonable to assume that access between the rear yard of Lot 44 and the other rear yards along the block would have been restricted by fences or other similar barriers.

When archaeological investigations commenced on the site, the buildings to the north and west of the yard in Lot 44 had already been torn down to the level of the sidewalk grade, and demolition had begun on the structure in Lot 43. The yard of Lot 44 was filled with rubble to grade level, except along the southern or rear side of the yard, where the surface of the rubble dipped about one meter and where three approximately 15 meter tall ailanthus trees were growing. The demolition of the building in Lot 43 was completed on 13 April, and the clearing of the yard in Lot 44 began the following day. Because the yard in Lot 44 was so much larger than the yards in Lots 1 1/4 and 4, a front-end loader or bulldozer was used to clear the upper layers of rubble, while the Dynahoe 190 backhoe was reserved to perform the more sensitive task of removing the final meter or so of debris above the yard surface. This was accomplished by 18 April, and archaeological excavations within the yard began on the same day.

The rubble filling within the yard of Lot 44 was similar in character to the construction debris that had previously been removed from the yards of Lots 1 1/4 and 4. Bricks were once again the most common element in the fill, although imprinted bricks appeared with much less frequency than

they had in the other yards. The imprinted bricks from the yard of Lot 44 also offered less variety, and SCHULTZ was the only brand imprint represented in the demolition fill. Beneath the rubble within the yard, torn sheets of roofing tar paper and, in the central section of the yard, plywood boards lay on the ground surface. Demolition debris was also cleared from above the approximately 1.5 meter wide strip that ran behind the buildings in Lots 47 and 48, adjacent to the western side of the yard in Lot 44. Unlike the yard in Lot 44, which had never been paved, the strip in Lots 47 and 48 was surfaced with concrete, and this paving was removed by the backhoe.

The yard in Lot 44 was closed on its east by the uninterrupted sidewall of the 1878 brick building and later nineteenth century extension that filled Lot 43. To the south, the yard was bordered by the cinder block basement wall of the twentieth century apartment house that occupies Lots 5 and 6. Windows in this wall opened onto the garage that was located in the basement of the building. On the west, the rear wall of the building extension that had occupied the back half of Lots 47 and 48 had been demolished to within a meter of the ground surface. No doors or other openings were apparent in what remained of the extension. The rear wall of the building that had occupied the northern or front half of Lot 44 had been similarly destroyed. In addition, the eastern half of the wall was left buried

in demolition debris so that a rubble ramp could be formed to provide access to the yard. Under these circumstances, it is perhaps not surprising that no door or other means of access could be recognized leading from the building that had stood on Lot 44 to its yard behind.

Trench 3

Trench 3 was positioned in the southeastern corner of the yard, approximately 1.5 meters from the eastern border of the yard and 3.5 meters from its south (See Plate 1). The surface of the trench beneath the rubble within the yard was 7.07 meters above sea level (see note, p. 14) (See Plate 14).[4]

The ground within Trench 3 was covered by an approximately 0.1 meter thick layer of black sooty soil [excavation unit 03-1]. This type of deposit had not been encountered in Trenches 1 and 2, where paving had sealed the yard surfaces. Materials found in the soot layer ranged from late twentieth century coffee stirrers and aluminum pop-top cans to nineteenth century ceramic marbles and pottery.

Removal of the soot layer revealed two soil matrices within the trench. A light, reddish-yellow clay was present

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[4]There is a discrepancy of 0.89 meters between the ground surface elevation as recorded by the archaeological field crew in April 1984 and elevation printed on the developer's demolition plan for the site, which was completed in April 1981 and which gives the elevation of the southeastern corner of the yard as 7.96 meters. Some, and perhaps all, of the discrepancy is to be made up by the refuse and surface debris that was removed from the yard when the ground surface was being cleared for the archaeological excavations.

in the northern half of the trench, while a darker, brown sandy clay was encountered in the south. The darker soil was packed with numerous chunks of mica schist, of an average length of 0.2 to 0.3 meters. A semi-vitreous ceramic drain pipe, interior diameter approximately 0.12 meters, of the type first manufactured in 1866, ran through the northwestern corner of the trench. The only other features of note in the upper layers of Trench 3 were a cat skeleton, portions of which were found mixed in the earth of excavation units 03-2, -4 and -5, and a dog burial, which was found at an elevation of between 6.75 and 6.85 meters [excavation unit 03-5]. The dog had been deliberately buried in the rocky soil near the southeastern corner of the trench. The burial extended into the trench's eastern scarp, and thus only the hind quarters of the dog's skeleton were excavated. The soil matrix surrounding the dog's burial contained twentieth century as well as nineteenth century artifacts.

One additional find of bone requires comment: a human proximal phalanx (i.e. fingerbone) was recovered in excavation unit 03-2. Indications of wear on the phalanx suggest that it was transported to the site and deposited sometime after it was severed from its attached human. The mechanism by which the bone reached the site could not be determined.

Further excavation in Trench 3 below the occupational strata of the back yard was conducted using the backhoe, which stripped off discrete layers of approximately 0.30

meter thickness. The excavations were continued down to a level below the site's water table, which was encountered at an elevation of approximately 3.75 meters. Cultural materials were found to an elevation of approximately 3.5 meters (backhoe test 10). Beneath this level, there was a thick deposit of blue-gray clay. The clay contained bits of rotted vegetal material but no artifacts or other evidence of human activity. The culturally sterile clay appears to be the kind of soil that would characterize a swampy lowland or muddy-bottomed creek. Excavations were terminated at an elevation of approximately 3.15 meters when undercutting due to water seepage threatened to collapse the walls of the trench. At this deep level, the excavations had still not reached the bottom of the blue-gray clay.

Three distinct levels of the nineteenth century fill were recognizable above the blue-gray clay. The uppermost level consisted of the brown, sandy clay that was first encountered in the southern half of the trench in excavation unit 03-2. The bottom of this brown, sandy clay was reached at an elevation of approximately 6.25 meters, where it overlay an approximately 1.0 meter thick layer of large schist rocks. The rocks ranged up to approximately 0.5 meters in length. The interstices between the rocks were generally free of soil or other packing, although a number of fragments from a nineteenth century red-glazed red ware chamber pot were found in the rocky rubble along the western

side of the trench. Some additional smaller fragments of nineteenth century ceramics and a broken stamped brick, imprinted A[..., were also recovered from amongst the rubble. The final fill layer in Trench 3 consisted of a sandy clay stratum that extended approximately 1.75 meters down from the rock rubble to the culturally sterile blue-gray clay. A limited quantity of cultural materials consisting of small fragments of iron, glass, coal, coal clinker and butchered bone identified this fill as historic. It was not possible, on the basis of the artifacts recovered from the three fill deposits within Trench 3, to determine exactly how many years had elapsed between the dumping of the successive fills. Certainly, the time between the layers would have to be reckoned at most in decades and it is entirely conceivable that the three fill layers, the upper sandy clay, the rock rubble and the lower sandy clay, represent nothing more than successive wagon loads of fill material brought to the site as part of a single land-building episode.

Trench 4

Trench 4, the last of the excavation trenches, was positioned near the northwestern corner of the yard in Lot 44 (See Plates 1 and 15). The trench was situated along the line that divided Lot 44 from the undeveloped strip that ran along the back of Lots 47 and 48. The 2 by 2 meter trench was located 10.9 meters north of the southern edge of the yard in Lot 44, 6.15 meters west of its eastern edge, and it overlappped the strip at the rear of Lot 47 by approximately 0.4 meters. The elevation of the ground surface within the trench was recorded by the archaeological crew as ranging between 7.08 and 7.33 meters, somewhat lower than the 7.86 meter elevation recorded for the northwest corner of the yard in the developer's pre-demolition site survey. However, it must be remembered that the developer's survey was conducted before features such as the concrete paving that covered the undeveloped strip at the rear of Lot 47 were removed, and before the refuse and other debris were cleared from the yard of Lot 44.

The black, sooty surface layer previously encountered in Trench 3 appeared only along the eastern side of Trench 4 [excavation unit 04-1]; in other words, the soot deposit was localized within the yard of Lot 44 and it did not extend onto the paved strip at the rear of Lot 47. Beneath the soot in the Lot 44 portion of Trench 4 was an approximately 0.15 meter thick layer of brown, sandy silt that covered

an approximately 0.3 meter thick layer of yellowish-gray clay (silt = excavation units 04-2 and -3; clay = excavation units 04-4 and -7). In the northeast corner of the trench, the silt was found to overlay and the clay was found to abut and underlay, an approximately 0.25 meter thick layer of schist rocks [excavation unit 04-5] (See Plate 16). Wedged between these stones, near the top of this shallow pile of schist, a treasure was discovered in mean surroundings: an 1853 half dime (coin 04-3-1). The half dime provides a terminus post quem for its surroundings, and it is thus noteworthy that the coin showed signs of considerable wear, an indication that it may have been in circulation for a number of years before it was deposited amongst the rocks.

A small brick sump/drain was exposed in the southwest corner of the trench [excavation units 04-9 and -10], within the area of Lot 47 (See Plate 16). This feature was similar to the sump/drain construction that was excavated in Trench 2 (see p. 29 above). The sump consisted of five courses of mortared brick and was approximately 0.3 meters deep. The top of the sump was encountered at an elevation of approximately 7.0 meters, 0.09 meters beneath the ground surface that lay under the concrete paving that had covered the strip at the rear of Lot 47 at the time of demolition for the current construction project. The sump extended beyond the limits of the trench towards the south and west; because this was a relatively familiar feature, seemingly

little different from the sump/drain in Trench 2, it was decided not to enlarge the trench to expose the complete horizontal surface of the sump.

Packed around the sump/drain and extending towards the north in a strip that was coterminus with the limits of Lot 47, was a band of dark brown, sandy and cinder-filled silt [excavation unit 04-6]. A number of brick fragments were packed into this matrix, and along its eastern limit, schist slabs of approximately 0.4 by 0.2 by 0.15 meters were positioned along the line that divided Lot 47 from Lot 44. The schist slabs lay at an angle, canted down towards Lot 47, and the whole arrangement resembled a builder's trench, extending down from an elevation of approximately 7.1 meters. The bottom of the trench was at the same level as the bottom of the sump/drain, approximately 6.7 meters above the Manhattan standard sea level. The trench extended too far to the north for it to have been dug exclusively as part of the construction process of the sump/drain in the southwest, and the purpose of the trench remained a mystery until deep testing with the backhoe approximately 0.3 meters west of the western edge of Trench 4 revealed the stub of a brick wall running along a north-south line and extending approximately 0.5 meters beneath the ground surface. The function of this wall was not determined; it was independent of the rear wall of the nineteenth century extension that was built onto the rear of the building

in Lot 47, and it does not correspond to any of the walls in any of the structures recorded in either the city's building records or the nineteenth and early twentieth century city land atlases.

Underneath the builder's trench in the west and the yellowish-gray clay in the east was the first soil layer to be distributed across the entire trench. This consisted of a dark brown, sandy fill stratum that contained s significant quantity of cinder and ash [excavation unit 04-8] (See Plate 16). In contrast to preceding strata, which were the result of activities that took place within the individual lots, this layer marked the uppermost level in the area-wide filling sequence that transformed the rolling terrain of mid-Manhattan into a developable building district. The surface elevation of this initial dark brown fill stratum ranged between 6.75 and 6.92 meters, and the stratum was between 0.09 and 0.19 meters thick. Artifacts recovered from this layer included the usual collection of nineteenth century ceramics (ironstones, red and white wares), as well as fourteen kaolin pipe stem and bowl fragments. The pipe fragments included a portion of a decorated bowl from the quarter century between 1850 and 1875, and an embossed stem fragment of similar date (bowl 04-8-2, stem 04-8-4).

Subsequent excavations within Trench 4 were conducted using the backhoe, which stripped off discrete soil layers

of approximately 0.3 meter thickness. Beneath the dark brown, sandy fill was a layer of lighter brown, sandy silt [excavation units 04-11 and -12] that overlay a deposit of reddish-brown, silty sand [excavation units 04-13 to -17]. The lighter brown stratum was approximately 0.5 meters thick, while the reddish-brown, sandy silt was approximately twice as deep. As was the case in the fill strata in Trench 3, limited quantities of historic materials were found in each of Trench 4's fill strata. Although these materials were sufficient to demonstrate the nineteenth century date of the fills, they were not sufficiently diagnostic to permit the establishment of precise dates or durations for the successive fill layers.

A layer of light tan, silty sand at an elevation of approximately 5.0 meters [excavation unit 04-18] marked the height of the water table within Trench 4, and it also marked the interface between the trench's fill strata and the underlying, culturally sterile, blue-gray clay. This alluvial clay was identical to the subsoil in Trench 3. It was tested to a depth of approximately 3.65 meters above Manhattan standard sea level [excavation units 04-19 and -20], and was found to be devoid of artifacts or other evidence of human activity.

CERAMIC PIPES

The excavations at 53rd Street produced forty-one fragments of white kaolin pipes and one fragment of a red clay pipe stem. Of the white kaolin pipes, thirteen of the fragments came from pipe bowls, tweny-seven are pieces of pipe stems and one fragment preserves the lower portion of a bowl and its transition to the stem.

Ceramic pipes were first mentioned in English texts in 1573 and the practice of pipesmoking became widespread in England before the end of the seventeenth century (Oswald 1975: 3-6). Kaolin pipes of the type found at the 53rd Street site were produced (and, more importantly for the archaeologist, discarded) in enormous quantities throughout their centuries of manufacture and use, which extended into the early twentieth century. The pipes were very inexpensive, and it was not unusual for taverns to maintain a supply of pipes that would be distributed without charge to customers. In the late nineteenth century, these tavern pipes were available to English publicans at the modest cost of nine pence per gross (Daniell 1964-65: 61). Private households are known to have used an average of 200 or more pipes per year (cf. Walker 1977: 3)[5] These numbers help put the forty-two pipe fragments from 53rd Street

[5]The old idea that stem segments were normally broken off as the clay pipes were passed between smokers has recently been shown to be a myth (Hume 1969/1982: 301).

into their proper cultural perspective.

During the nineteenth and early twentieth centuries, the period to which the smoking pipes from the 53rd Street site must be dated, there were two basic types of ceramic pipes in use in the United States. The more traditional form of pipe consisted of a single-piece kaolin bowl and stem. The stem length varied from a few inches on the stubby worker's pipes that were designed to fit into a vest pocket, to nearly two feet on the elongated so-called church warden pipes. In contrast to the single-piece pipes, a newer form of pipe consisted of two distinct elements and combined a ceramic pipe bowl with an inserted reed stem. On these inserted stem pipes, the bore diameter of the smoke exit from the pipe bowl was enlarged to permit the insertion of the stem. In all of the cases where the smoke exit is preserved on the bowls of the pipes from the 53rd Street site, they are of the smaller size that indicates the traditional, single-piece form.

Pipe bowls:

The practice of embellishing pipe bowls with some form of modeling became common during the late eighteenth century and I. Walker has noted that ornamented pipe bowls are generally to be dated to that period and later (Walker 1977: 19-23). None of the six decorated pipe bowls that were found at the 53rd Street site exhibit features that

would require their being dated prior to the nineteenth century.

02-17-1 is a small fragment from a pipe bowl that bore vertical fluting (also termed reeding or ribbing). The fragment is too small to determine whether there was additional decoration on the bowl (cf. the eighteenth century bowls with fluted upper segments and decorated anthropomorphic lower bodies, Sudbury 1979: 178f., Fig. 2 on p. 234 and Pl. 7.5 and 7, and the nineteenth century English pipes with fluted lower bodies and plain or decorated uppers, Hanson 1971: 94, Fig. 2a-c).

03-2-2 is a simple bowl embellished with a single vertical ridge.

03-5-1 (See Plate 17a) is a segment from an anthropomorphic bowl. Facial details are not preserved on the fragment, which includes the ear and portions of the leonine, satyr-like hair and beard of a (presumably) male figure. A plain band above the hair forms the bowl top. Anthropomorphic or "face" pipes were quite popular during the nineteenth century (Walker 1977: 23) and they depicted established political and public

figures in addition to more generalized types. "Boss" Tweed and Horace Greeley were among the New Yorkers whose faces were immortalized on this kind of smoking equipment (Sudbury 1979: 177).

04-1-1 is a small fragment that preserves a portion of the rim top and upper section of a pipe bowl. The bowl is decorated in relief with a single vertical herringbone band that runs down from the rim. A similarly decorated pipe from Warwick has been dated ca. 1870-1890 (Taylor and Gault 1979: 293, #58 and 279f.).

04-3-2 (See Plate 17 b, right) is a segment of a plain bowl with a single line of milling or rouletting directly beneath the rim. The practice of adding a band of milling around the top of the pipe bowl was common in England and Holland in the seventeenth century (Oswald 1975: 18). Although Oswald states that this practice was discontinued in England after 1700 (p. 19), pieces found at a clay pipe kiln near Lincolnshire indicate that pipes with milled rims were being produced in England into the twentieth century (Wells 1970: Fig. 2). Pipes with milling beneath the bowl rim were being produced in New York State

during the nineteenth century (cf. Sudbury 1979: 175f., Pl. 6.3 and 4, products of the Eagle Tobacco Pipe Manufactory that operated in Roses Point, New York between 1875 and 1884). Omwake has dated fragments similar to 04-3-2 to the period 1850-1890 (Omwake 1965: 132f.).

04-8-2 (See Plate 17b left) is a fragment from the lower bowl and stem of a fluted (reeded or ribbed) pipe. The bore diameter of the stem is 5/64th". The fluting consists of alternately thin and thick ridges that curve with the lines of the pipe from the stem tip to the vertical bowl. On complete examples, this fluting resolves into a pattern of vertical gadrooning in which narrow ridges separate the thickened gadroons (cf. Hanson 1971: 94, type A ribbed, Fig. 1g, from England). Omwake has assigned this type of fluting (his form "5d") to the period ca. 1850 to 1875 (Omwake 1965: 135-137). Fluting in its various forms was common on nineteenth century kaolin pipes, and examples are known from New York (Hanson 1971: Figs. 1g, 2a-c, 4c-f) to California (Humphrey 1969: 20). Hanson identified a pipe similar in form to 04-8-2 as an English import (Hanson 1971: 94).

Pipe stems:

In 1954, J.C. Harrington published an article that revolutionized the study of the plain, kaolin pipe stem fragments that archaeological excavations invariably recover in much greater quantity than the apparently more diagnostic decorated pipe stem and bowl fragments (Harrington 1954, reprinted in Schuyler 1978: 63-65.). Harrington noted that the diameter of the internal stem bore changed through time, with the size being gradually reduced during the seventeenth and eighteenth centuries. Thus, the ubiquitous stem fragments could serve as useful chronological indicators.

Harrington divided the stems into groupings based on measurements taken in 64th's of an inch, and working with a collection of stems from dated contexts, he prepared a chart correlating bore diameter and date. Harrington maintained that by using the chart, individual specimens could be assigned to their proper century and large collections could be dated within a few decades.

Seven years after Harrington's initial publication, Binford worked out a relatively simple mathematical formula to calculate the date of a collection of stem fragments (Binford 1961, reprinted in Schuyler 1978: 66-67). Binford's formula is y=1931.85-38.26x, where "y" is the date in years, 1931.85 is the date by which time the bore diameter would equal zero in a linear progression derived from Harrington's

sequence of bore diameter reductions, 38.26 is the number of years between each diminuation of the bore diameter measured in 64th's of an inch, and "x" is the mean pipe stem diameter for the assemblage that is being studied. Subsequent studies have led to some refinements in the Harrington-Binford dating method (reviewed in Oswald 1975: 92--95), but in general the method can be counted on to yield reasonably accurate dates for collections of pipestems that were produced prior to ca. 1760-1780. After that time, the system breaks down and becomes unreliable, and nineteenth century assemblages consistently yield bore diameter "dates" that are earlier than the actual artifacts (cf. Binford 1961; Oswald 1975: 93; Walker 1965).

This failure of the bore diameter dating method to work with nineteenth century materials is clear from an analysis of the pipestems from the 53rd Street site. The site produced twenty-seven white kaolin stem fragments of the following diameters:

1 of bore diameter 4/64"
19 of bore diameter 5/64"
1 of bore diameter 5.5/64"
6 of bore diameter 6/64".

These diameters would indicate a date between 1710 and 1750 according to Harrington's chart and a date of 1732.76 according to Bindford's formula. Despite these early dates, it is clear from other evidence (including decoration on

some of these self-same pipestems) that the pipestems from 53rd Street were not produced before ca. 1850.

Plain kaolin pipestems are quite porous and they tend to adhere to the lips of the smoker. In order to avoid this unpleasant effect, the stems were sometimes glazed or covered with a red wax for the first inch below their terminal tips (Hume 1969/1982: 302; Walker 1977: 148). I. Walker has noted that soaking the stem in beer was another method used to prevent the lips from sticking to the pipe (Walker 1977: 149). Four of the stem fragments from the 53rd Street site preserve traces of a red to dark reddish brown stain or adhesion that may be associated with the kind of waxing described above:

03-4-1 with stain/adhesion colored 2.5YR 3/6

04-1-2 with stain/adhesion colored 2.5YR 4/6

04-8-7 with stain/adhesion colored 2.5YR 3/4

04-8-10 with stain/adhesion colored 2.5YR 3/6.

Only one of these four fragments is certainly a tip (03-4-1); it is plain-ended and filed to a tapering point. A second tip from the site, 04-2-1, is similarly shaped, while a third tip, 03-5-2, terminates in a raised ridge as was common on nineteenth and early twentieth century short-stemmed pipes (e.g. Taylor and Gault 1979: #'s 28, 49 and 59; Muldoon 1979: #32b-d).

Decorated stem fragments:

Pipes with stems imprinted with names or initials were made before 1700. For the early period, this form of embellishment is often, although not with total justification, described as characterizing Dutch in contrast to English pipes. By the nineteenth century, the practice of including markings on the pipe stem was firmly established. These marking consisted of names, initials and various forms of decoration. The inscriptions on the pipe stems served a variety of purposes: they identified manufacturers or the locations of the manufactoires, they advertized goods for sale (especially wines and spirits), they indentified the particular style of the pipe, or, in the case of the "gimmick" pipes that were popular during the nineteenth century, they referred to some famous event or political slogan (Walker 1977: 16-19).

Five of the white kaolin stem fragments from the 53rd Street site are decorated, and three of these five bear the imprint of a single manufacturer.

"Peter Dorni" pipes:

01-25-1 (bore = 5/64"): decoration consists of two rows of oak leaves in relief.

04-2-3 (bore = 6/64"): decoration consists of two rows of oak leaves and four rows of ridges in relief. The bands between the ridges are alternately plain and hatched.

04-8-4 (bore = 5/64") (See Plate 17c): decoration

consists of two rows of truncated oak leaves or blurred stars, and twelve ridges in relief. The bands between the ridges are alternately plain and hatched. Following the fourth ridge below the leaves/stars, in raised letters set within rectangular panels on opposite sides of the stem, the name "PETER" with the letters running away from the leaves/stars and the name "DORNI" with the letters running towards the leaves/stars.

Peter Dorni was a pipemaker who lived in northern France around 1850. His pipes were imitated in Holland for export to the United States, and Dorni stems are occasionally found with the additional inscription "GOUDA" or "HOLLAND" (Humphrey 1969: 15f; Omwake 1965: 129f., 136f.). Omwake has suggested that the Dorni pipes probably should not be dated later than ca. 1875 (1965: 136). Dorni pipes have been found at sites throughout the United States (e.g. California: Humphrey 1969; Wisconsin: Omwake 1965: 129f.; New York State: Hanson 1971) and their popularity was so great that they inspired local American imitations (Omwake 1965: 129). There were two varieties of Dorni stems: one with oak leaves, as 01-25-1 and 04-2-3, and the other with stars, as may be the form on the less clearly modeled 04-4-8. Both stem types are associated with pipes having milled bowl tops and figures impressed on the bowl backs (cf. Hanson 1971: 94).

Other decorated stems:

03-1-1 (bore = 6/64") preserves a portion of an inscription consisting of at least three letters in relief set within a rectangular depression that runs lengthwise along the stem. The inscription is illegible.

04-3-1 (bore = 6/64") preserves an inscription of at least eight illegible characters in relief. The inscription runs lengthwise along the stem.

COINAGE

One nineteenth century silver coin and one nineteenth century copper token were found at the 53rd Street site. A 1941 Lincoln cent, 04-1-1, completes the catalogue of coins discovered at the site. The metal of the earlier coinage shows signs of corrosion as a result of burial. The silver coin is also extensively worn; the copper token shows signs of less extensive use.

03-4-1: 1863 copper token (See Plate 18 a and b, right). Obverse: Liberty head (L.) wearing patriot's cap, thirteen five-pointed stars around border above, "1863" below. Reverse: Wreath, open at top, joined by crossed sabres at bottom; in center "ARMY/&/NAVY." Condition: sharp relief indicates limited circulation, but there is corrosion of the copper. Metal hoarding during the Civil War caused severe shortages in metallic currency and led to the private production of emergency coinages. Various alternatives to government specie were offered including paper stamps, which proved too fragile for extensive use, and paper stamps encased in brass and mica holders, which proved too expensive to produce. Copper tokens, usually issued in the size and weight of the government's one-cent piece, were by far the most popular alternative currency. They functioned in trade as the equivalent of a penny. The copper tokens combined the twin advantages of being familiar in form

to a coinage-using public while being economical to the producing merchants, since the intrinsic value of the metal in the copper tokens equalled only 23/100's of a cent. The first of these private coins was issued in Cincinnati in the autumn of 1862, and by the time Congress passed an act in 1864 forbidding the minting of private currencies, between 25 and 50 million of the Civil War tokens had been struck (low estimate: Hetrich and Guttag 1924/1968: 5; high estimate: Massey 1968: 167). The tokens may be divided into two broad classes: "tradesmen's cards," which bear the name of the issuing merchant and which are known in more than 8500 variants from 23 states, and "patriotic tokens," which bear some patriotic device or slogan, and omit merchant's identifications, of which approximately 1500 types have been identified. The patriotic tokens were issued mainly in and around New York City. 03-4-1 presents an example of two of the more common devices that appeared on the patriotic tokens (obverse, cf. Hetrich and Guttag 1924/1968: #'s 1-14; Fuld and Fuld 1960: #'s 1-19; reverse, cf. Hetrich and Guttag #'s 219-222, 225-238; Fuld and Fuld #'s 296-299, 304-319).

04-3-1: 1853 half dime (See Plate 18a and b, left). Obverse: seated Liberty, arrow-date type. Reverse: wreath with "UNITED STATES OF AMERICA" above, "HALF/DIME" in center. The obverse bears the standard seated Liberty image that was designed by Christian Gobrecht and that served as the

principal device in United States silver coinage from 1837 into the late nineteenth century. Two variants of the half dime were minted in 1853: 04-3-1 is an example of the more common form that is distinguished by the arrows flanking the date on the bottom of the obverse. The arrow-date coins are of reduced weight, as prescribed by the terms of the Act of February 21, 1853. Prior to the Act, on the non-arrow half dimes of 1853 and earlier, the bullion value of the coins actually exceeded the face value of the half dimes, thus encouraging the melting down of coinage for its value as raw metal bullion (Yeoman 1978: 101; Hobson and Obojski 1983: 447).

ARTIFACT SUMMARY

The artifacts examined -- glass, ceramics, and small finds -- reflect the period of time between 1825 and 1870/1880. The material is extremely fragmented, precluding vessel counts or definitive usage patterns. The debris is generally domestic, representing eating, drinking, and games.

The glass falls primarily into window glass and bottle glass. The bottle glass included wine fragments, but may also represent case gin (01-36/38:Bag 663). Other bottle fragments include beer and soda. Drug bottles, such as the Philadelphia oval (03-5), and at least one designated blue bottle (04-2) were recovered. Glassware tumblers were also well represented, the most prevelent pattern being the panelled flip type. The most interesting window/plate glass was an advertising sign etched in reverse: "Green Label Beef, Iron & Wine ..... C. Childs..." (03-5). One fragment of an eye glass lens was also found (01-35).

The ceramics represent the proliferation of domestic and probably also English-made whitewares and ironstones during the 19th century. Cups, saucers, plates and platters are represented. Utilitarian redwares are well represented, including hollow-ware vessels, flowerpots and one partially reconstructed chamber pot (03-Backhoe test 1.5m.), probably of local origin. Another local or northeastern product

reconstructed was the Rockinham teapot (c. 1830+) (01-25, -28, -29, -31, -34 and -35). A number of small whiteware bowls, reflecting the earlier pearlware decorations of annular banding (01-31 and 34), mocha fern and snail trail/earth worm (01-35) patterns were included in the collection, as were examples of blue transfer-print wares (e.g. 01-25 and 34).

Small finds included buttons, marbles and dolls, in addition to the pipes and coins. Virtually all the buttons were 4-hole white glass (opalescent), as shown in the Montgomery Ward Catalog for 1895; the most common size was #28 according to their chart, but sizes 16, 18, 22, 24, 26, 30, 32, and 34 were also represented. Two earlier buttons were also found -- one metal two-piece (02-coal lens) and a shell button (02-4). The marbles were of three types -- crockery (c. 1842+), clay (1884-1920) and glass (c. 1846+). Crockery marbles were most common. Several portions of bisque doll torsos (e.g. 04-2) were recovered, as well as two "frozen Charlotte" doll segments (03-2 and 04-8). These are first available in an 1895 toy catalog. Additional porcelain doll fragments were found in the ceramic deposit in Trench 1 (01-35).

Other finds included a small leather high-button shoe, which was not conserved and several bakelite comb fragments. A large bronze key with a broken top was excavated in Trench 01 (01-36). Miscellaneous metal fragments were also found,

none of which were considered diagnostic.[6]

[6]Inventory sheets for glass, ceramics, and small finds from this excavation are on deposit at the New York City Landmarks Preservation Commission, 20 Vesey Street and The Institute for Research in History, 432 Park Avenue South, New York City.

ANIMAL BONES

The animal bone report is appendix A.

CONCLUDING SUMMARY

Archaeological test excavations were conducted in April 1894 at the "53rd At Third" development site in midtown Manhattan. These excavations revealed no traces of prehistoric utilization within the site area. The natural surface of the site, which dipped towards the northeast where a stream was recorded as running through the area, had been covered with earth fill during the middle years or third quarter of the nineteenth century in order to produce a level ground surface suitable for development. Typical brick multi-storied, multi-purpose commmercial/residential structures had been built on the site between 1860/1870 and 1890, and excavations conducted within the backyards of three of these buildings revealed drainage facilities, as well as producing quantities of historic period artifacts and ecofacts.

The excavations at "53rd At Third" marked the first time that archaeological excavations had been conducted on Manhattan Island between Greenwich Village to the south and the Washington Heights-Inwood area to the north. The excavations also provided the first detailed archaeological view of the process by which the hilly interior of Manhattan was made into an area suitable for construction and development. The process of city-building through landfilling along the Manhattan water front has been investigated archae-

ologically since the late 1960's (Huey 1984 and, more generally, Geismar 1983), but the corresponding transformation of the central portion of the island, although high on the city archaeologist's list of desiderata for investigation (Baugher-Perlin et al. 1982:74f.), had not been previously studied through excavation. As a result of the field tests conducted at the "53rd At Third" site, it is now possible to suggest that the interior landfilling of Manhattan was quite different in character from the construction of the city's coastal landfills. Whereas the coastal fills utilized elaborate architectural cribbings or similar constructions, and tended to consist of artifact-rich deposit matrices (i.e. garbage dumps), the interior landfill at "53rd At Third" was laid without any apparent structural enclosures, and consisted of earth and rock rubble deposits that were relatively free of artifacts.[7] The depth of the landfill varied from under half a meter in Trench 1 to nearly three and a half meters in Trench 3. In Trenches 2, 3 and 4, it was clear that the fill consisted of more than one discrete soil type. However, there was no way to determine how much time, if any, elapsed between the deposition of each of the fill soils, and it is entirely possible that the

[7]For example, in Trench 3, the landfill levels within the trench (excavation units 03-6 through 16) produced only one-fifth as much artifactual and ecofactual material by weight (3.244 kgs.) as the overlying "living" strata (excavation units 03-1 through 5; 16.485 kgs.), although the fill strata were almost exactly five times as deep as the overlying levels.

filling of the area took place as a single construction episode, with the different fill soils representing nothing more than different wagon loads of fill material. The exact date of the landfilling, if it was a single occurrence, cannot be determined from the archaeological remains, although it seems highly probable that it was associated with the reported *sewering* up in 1871 of the stream that ran through the site area. Such a date would be fully compatible with the dates of the artifacts recovered from the fills and with the known architectural history of the block (see Stage IA survey).

Above the landfill lay the "living" strata of the individual backyards. The most substantial features discovered in these levels were drainage facilities. In Trench 2 (Yard 4) and Trench 4 (Yard 44), the facilities consisted of typical Manhattan backyard drains that fed water via metal piping into their buildings' water disposal systems. Both of these drains were protected by small brick cleansing sumps at the drains' entrances. The size of the drains, as well as the evidence provided by similar and still functioning drains in other Manhattan backyards[8], makes it clear that they were designed to provide rain water disposal. The considerably larger and more substantial sump in Trench 1 (Yard 1 1/4) was probably designed to cope with the more

[8]There is one in the author's contemporaneous backyard in Chelsea.

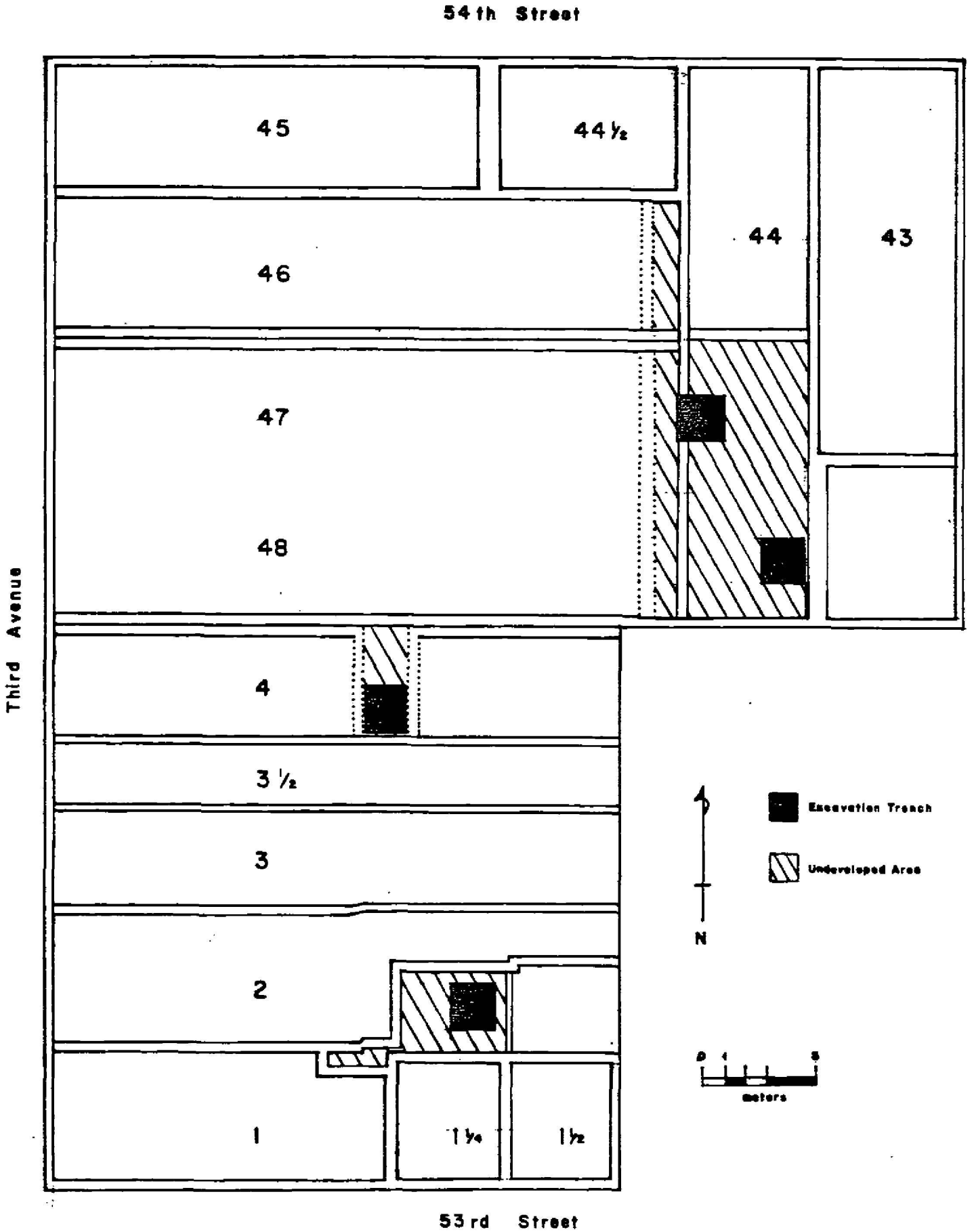
serious problem of ground water drainage.

The artifacts recovered from the upper levels of the yards consisted of normal household debris, with materials from the years following 1850 being in the great majority. Occasional eighteenth century ceramic fragments are the only earlier materials, and they are certainly to be considered "survivors" or "heirlooms." As is appropriate to backyard areas, a number of the finds consist of children's playthings, including marbles and porcelain dolls. Children are also likely to have been responsible for the one feature excavated in Trench 3: the formal burial of a domestic dog. And they may have been the agents in the somewhat less formal disposal of a young cat within the same trench.

Conspicuously absent from the excavations were any remains that might be attributable to the breweries that were located next door to the development site during the later nineteenth century. It is not known whether this is due to the fact that the breweries were involved only in wholesale keg shipments, which would be less likely than bottling to produce quantities of archaeologically recognizable debris, or whether this reflects the efficiency of late nineteenth century yard maintenance and garbage collecting. In either case, the absence sounds a cautionary note regarding the usefulness of archaeological data in the reconstruction of industrial economies.

A final note must concern the absence of prehistoric

Amerind remains within the development site. It was, of course, the possibility of finding evidence of prehistoric utilization that caused excavations to be conducted at "53rd At Third" in the first place (Stage IA: 42-47). The fact that four relatively small test trenches failed to uncover evidence of such utilization does not absolutely preclude prehistoric activity along DeVoor's Mill Stream, but faced with the legitimate needs of both the developer and the modern city, the absence of Amerind remains within the test trenches justified the decision to dispense with further excavations. Additional archaeological tests along other segments of Devoor's Mill Stream, or along other early water courses in Manhattan, would certainly be necessary before any general conclusions can be made regarding the preservation of prehistoric remains within the developed middle sections of the borough.



Excavation Trenches Relative To Lot Lines & Undeveloped Areas At Time Of Demolition

PLATE 1

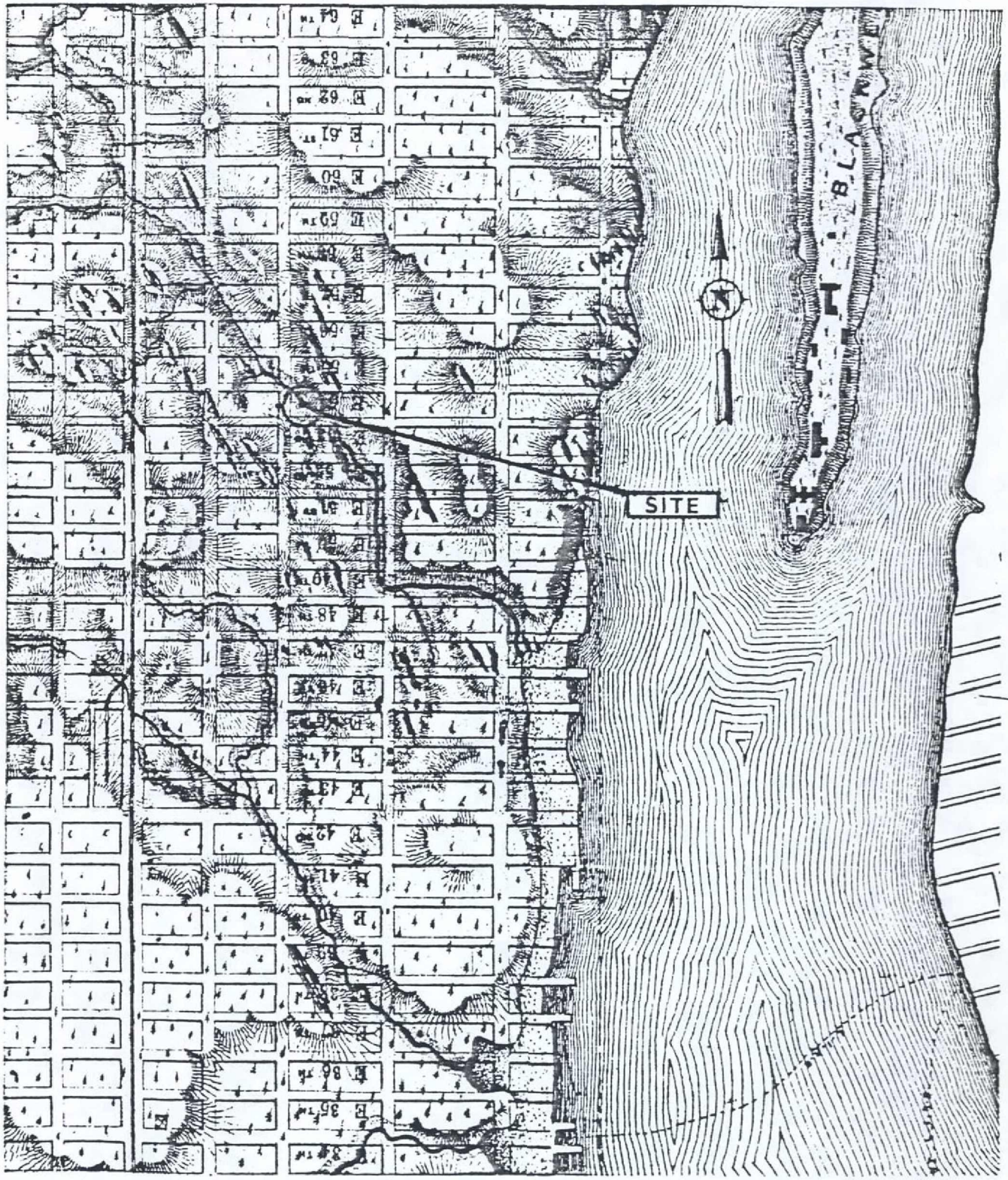


PLATE 2 -- Viele 1874

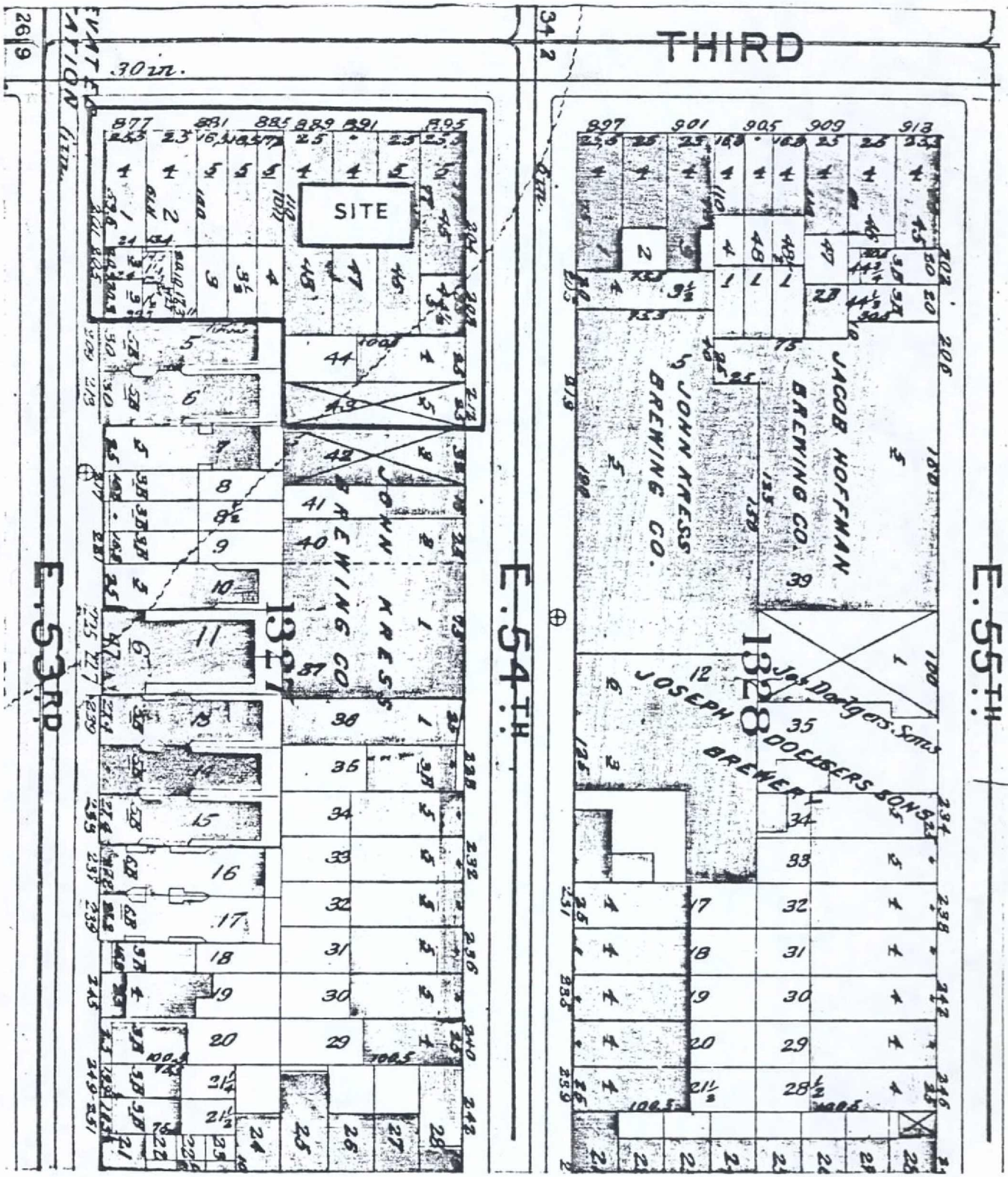


PLATE 3 -- Bromley 1898

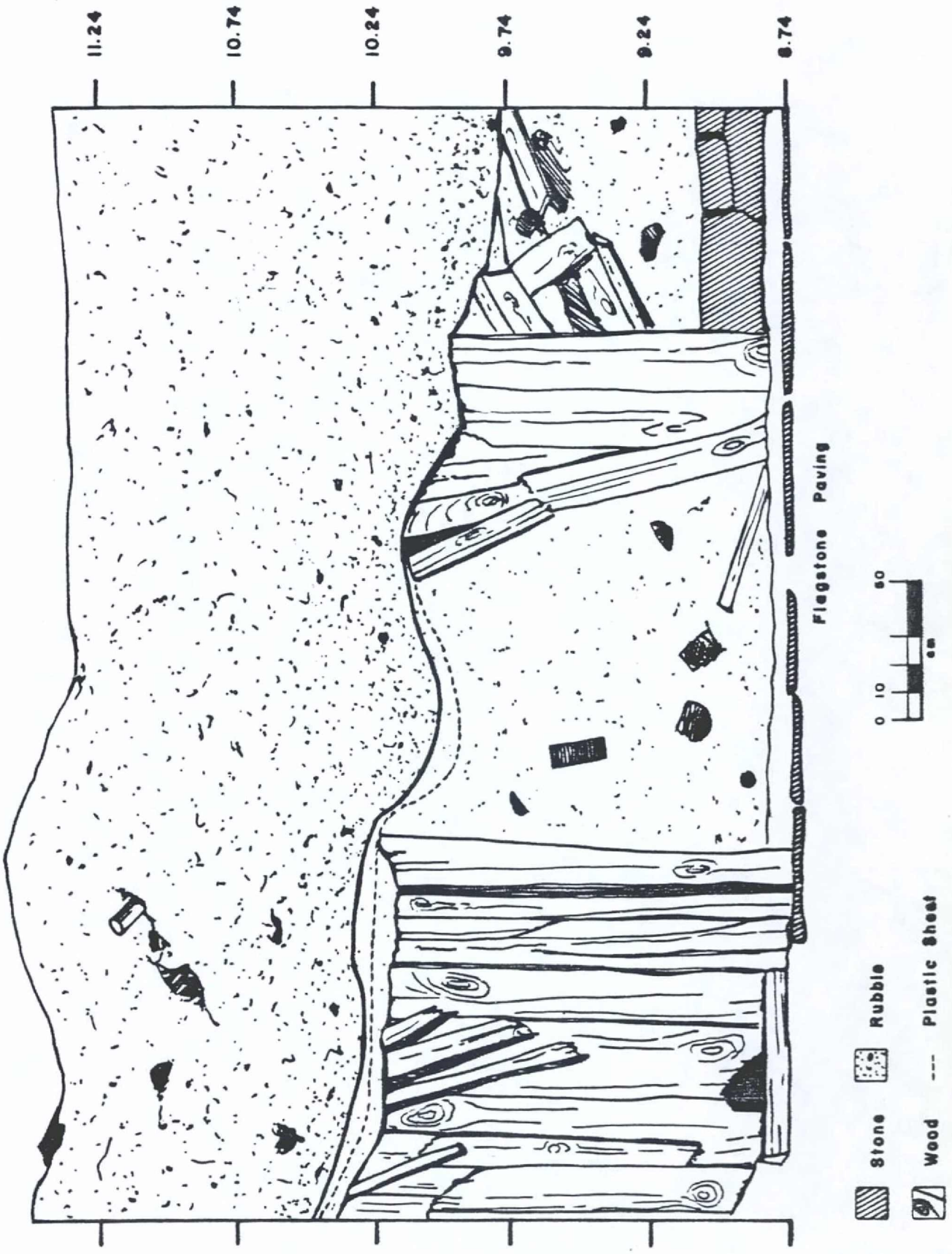


PLATE 4 -- Yard 1 1/4 - East Wall

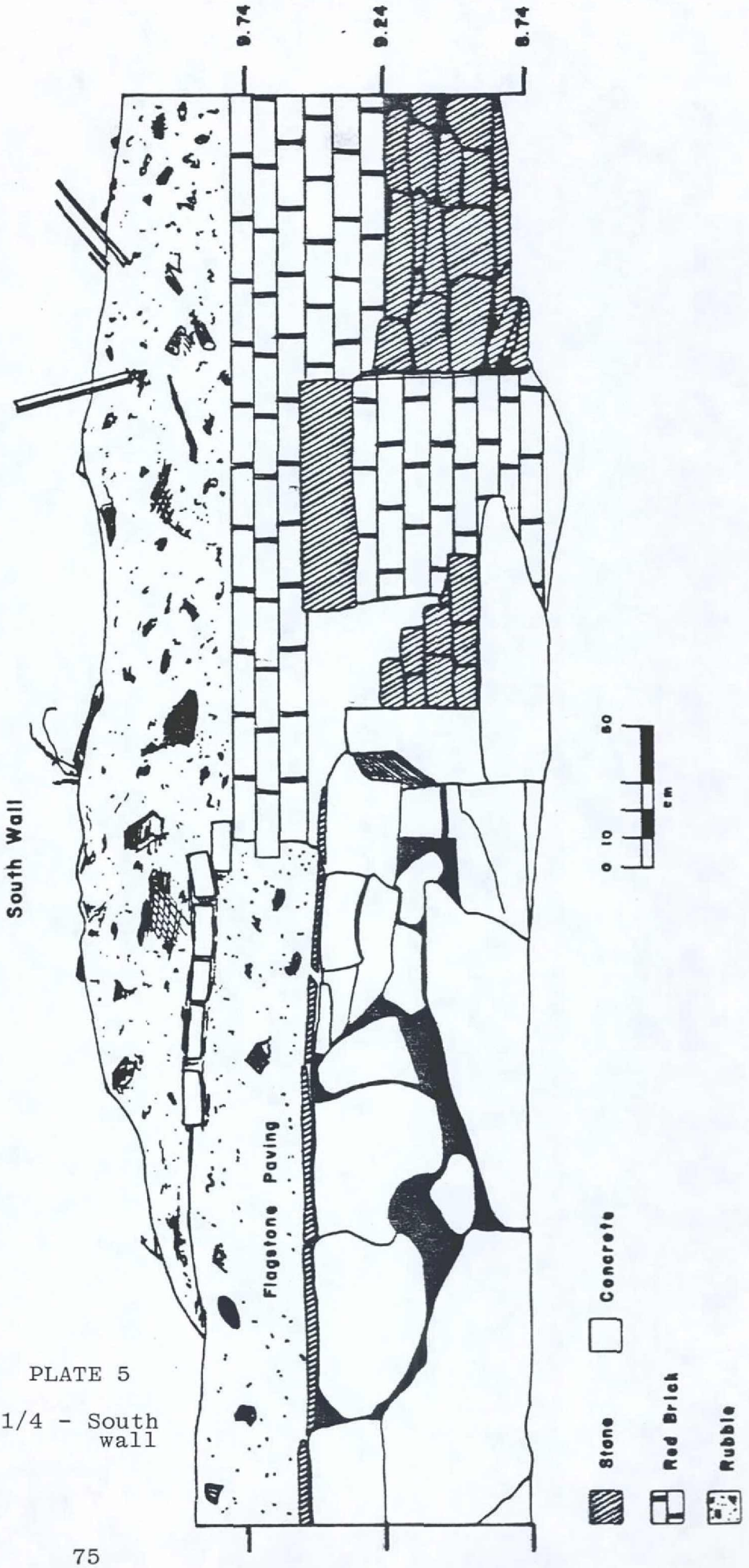
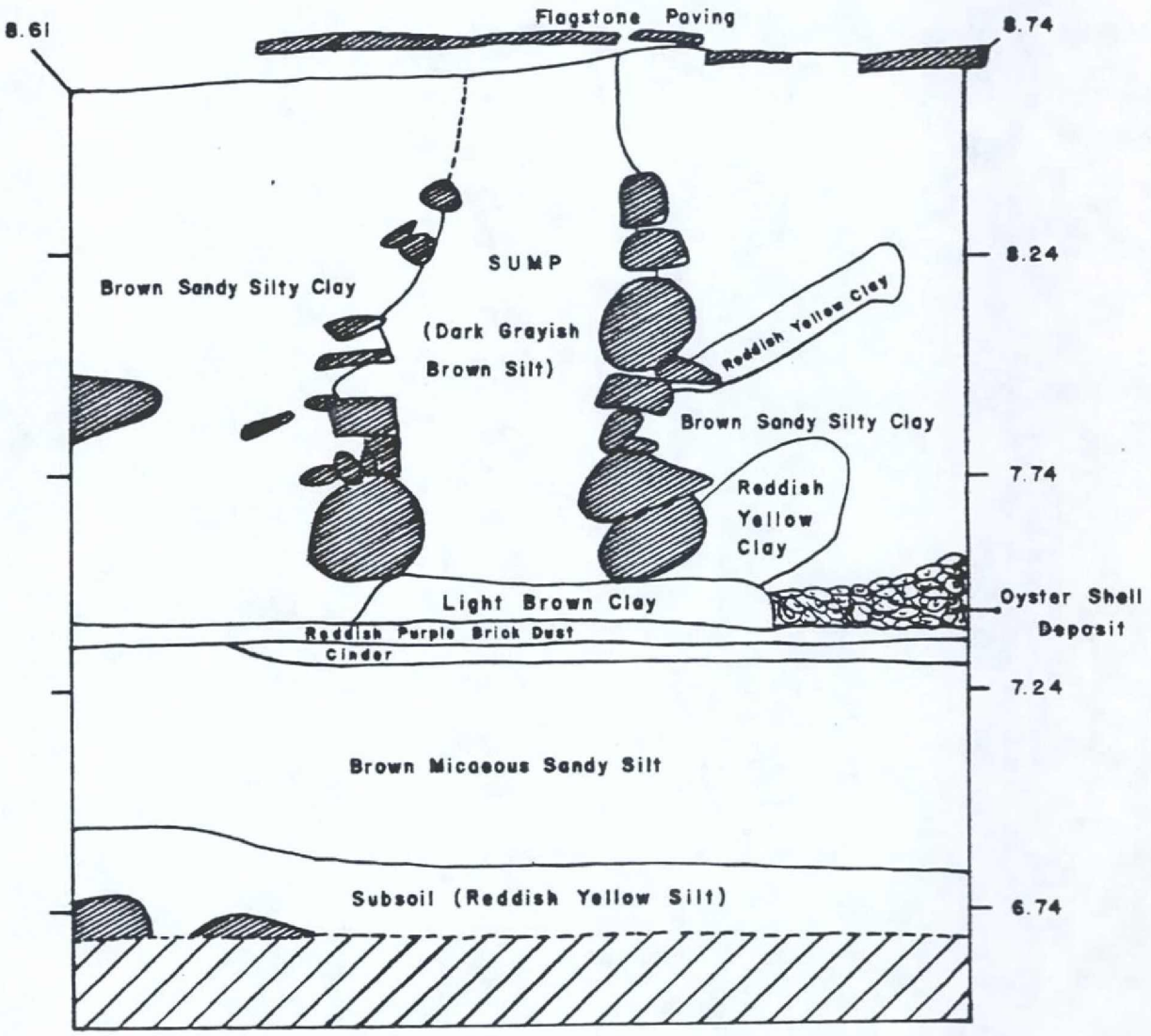


PLATE 5

Yard 1/4 - South wall

Profile of East Wall of Trench I



Approximately 80cm down from the Reddish Yellow Silt is a Red Silt.

Stone

0 10 50

cm

PLATE 6

Plan View of Trench 1

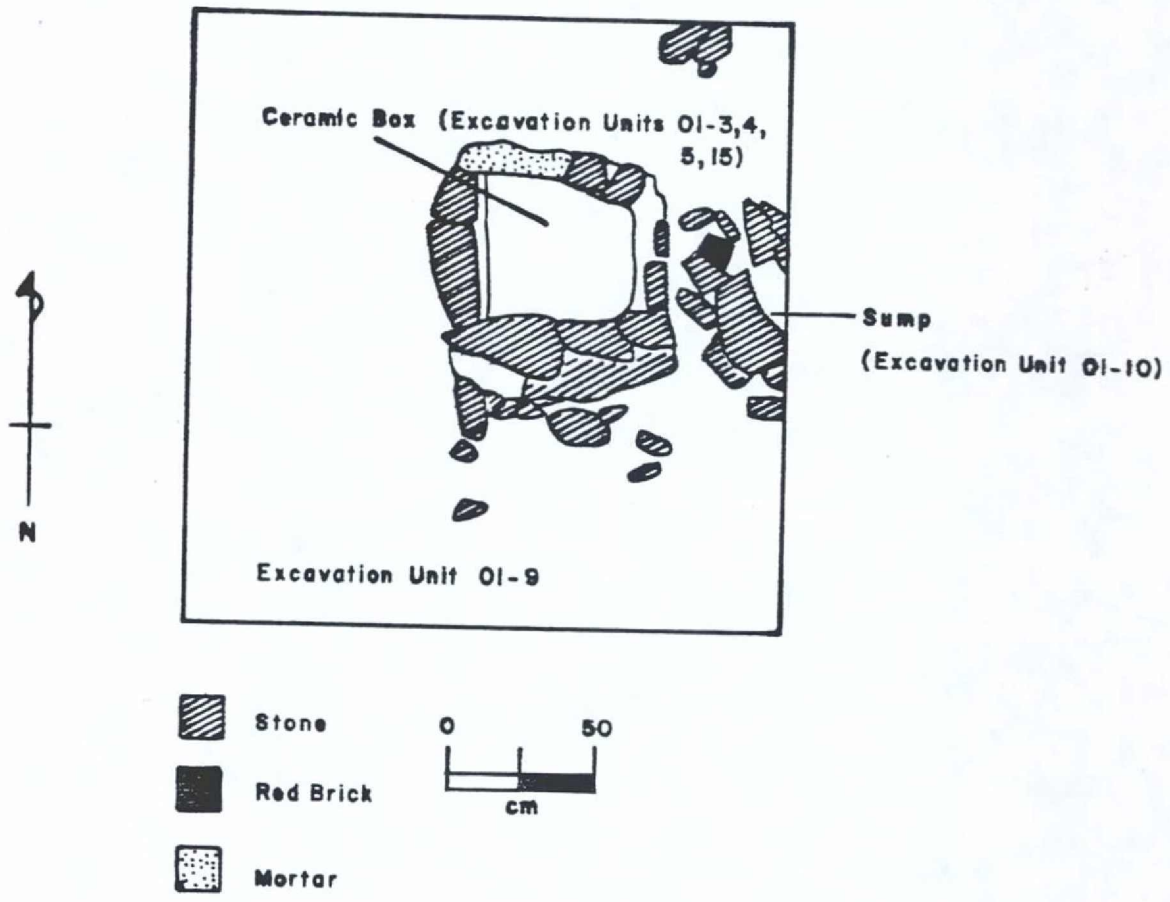


PLATE 7

Plan View of Trench I

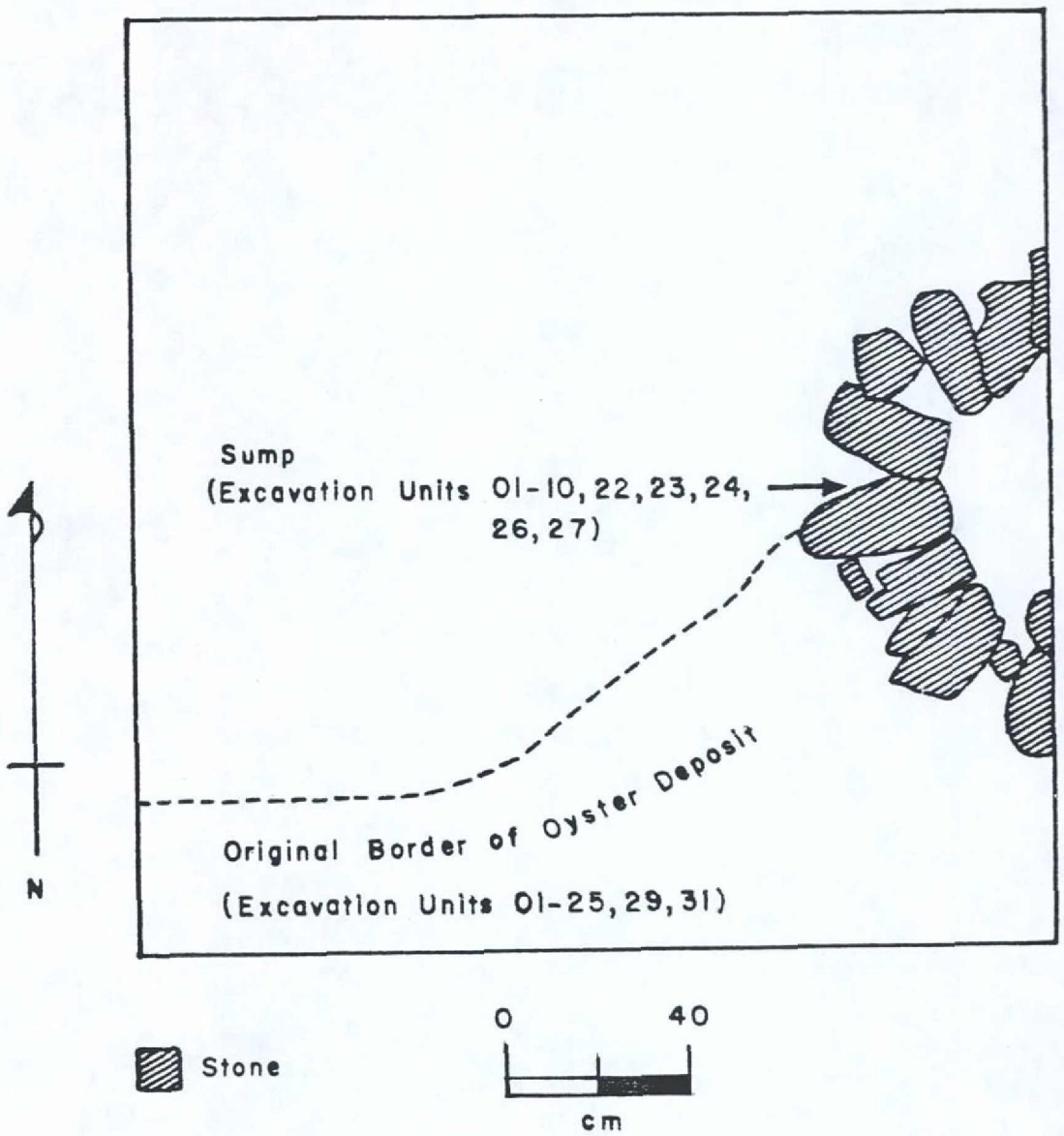
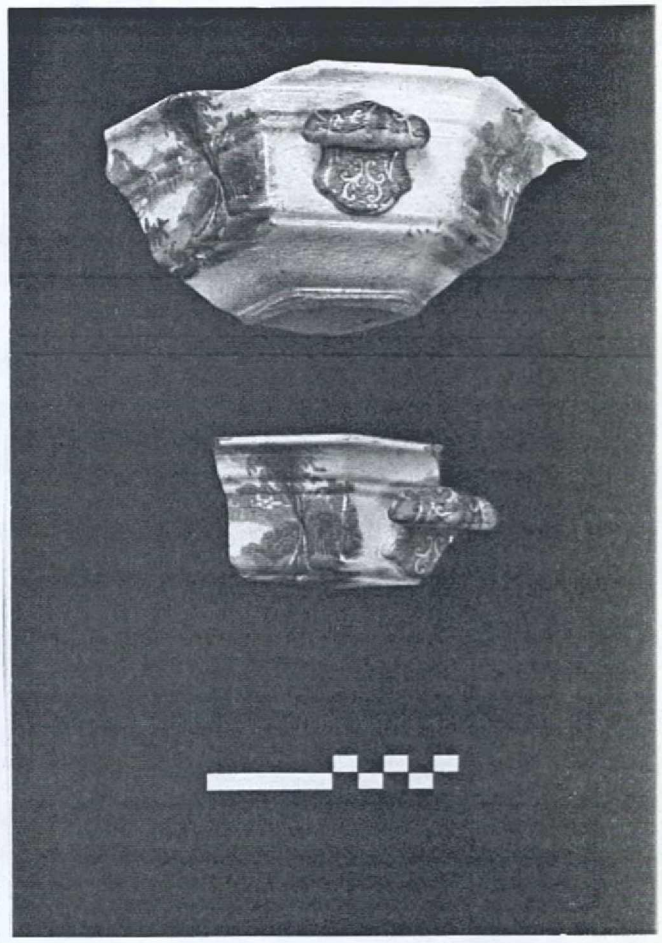


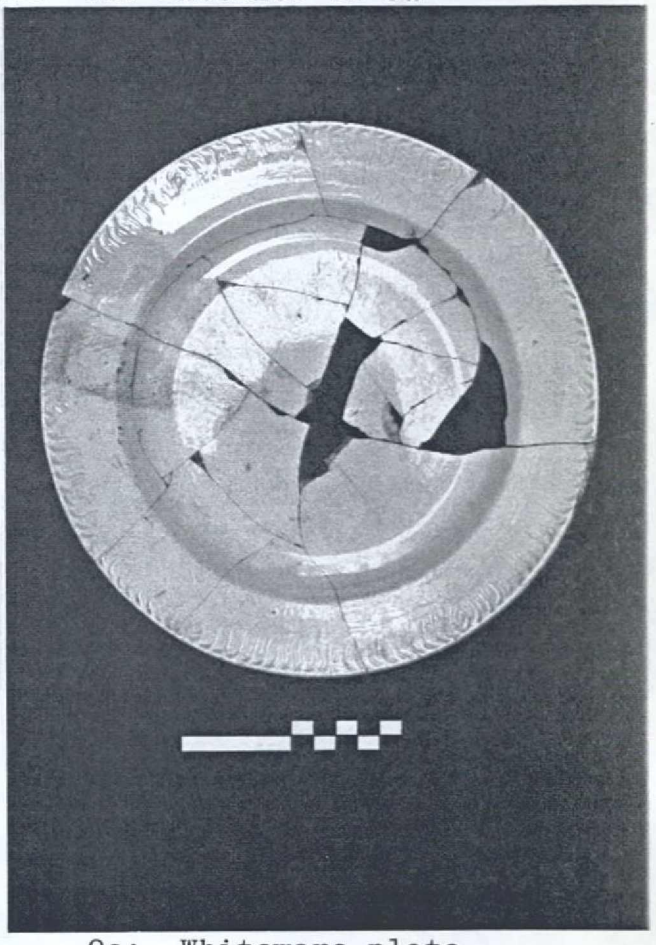
PLATE 8

9a: Blue transfer-ware vegetable bowl



9b: Exterior of 9a

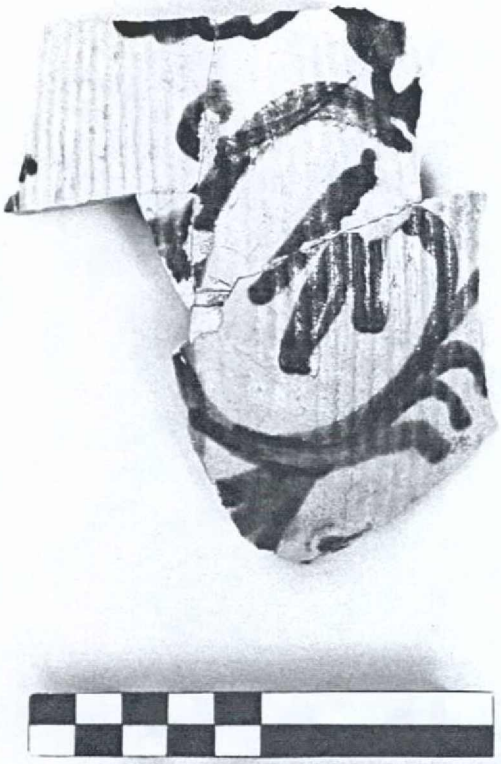
9c: Whiteware cup



9c: Whiteware plate

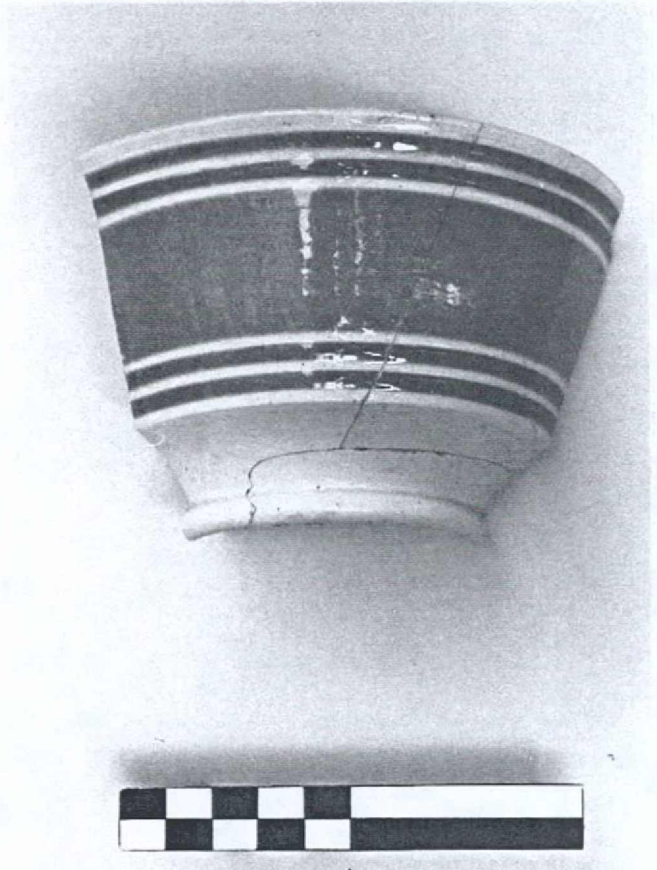
PLATE 9 -- Ceramics

a



a: Gray stoneware

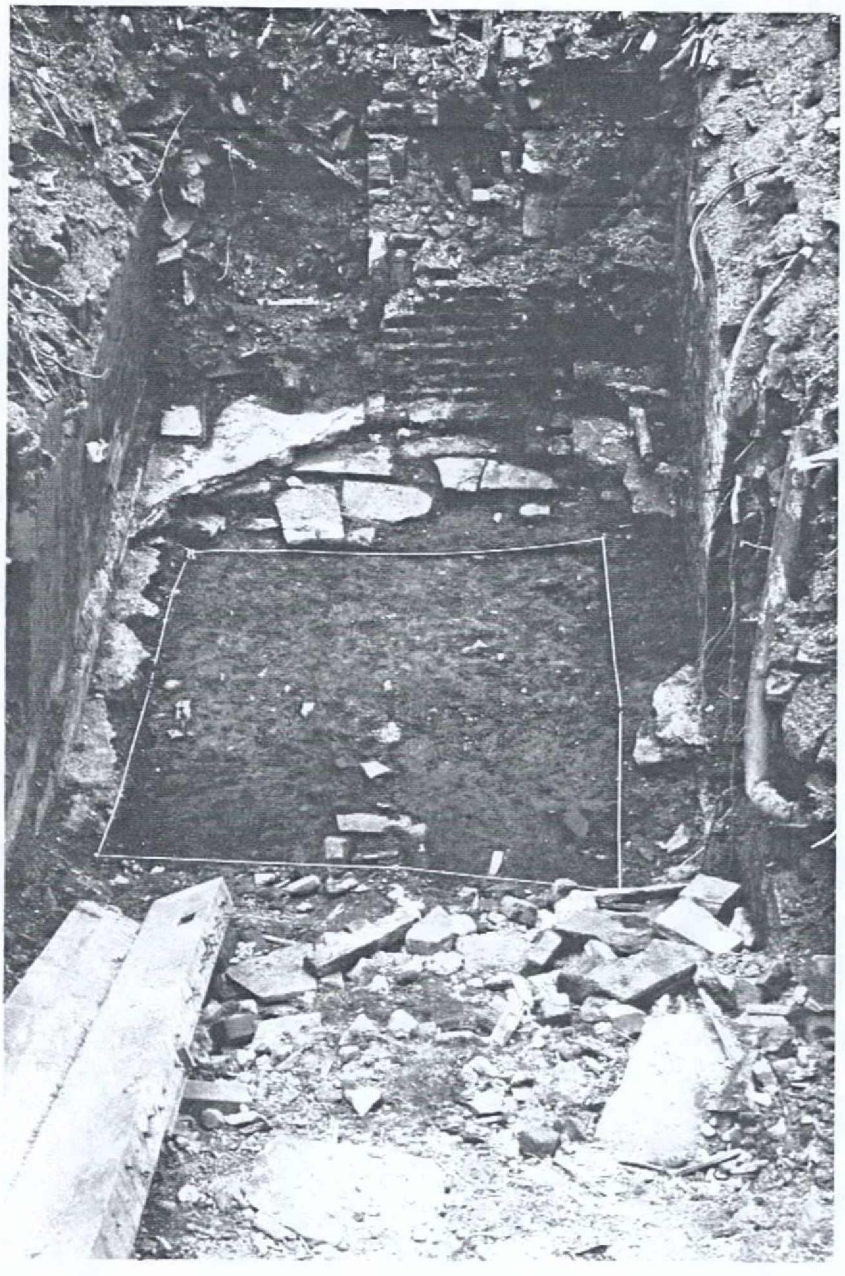
b & c: Decorated whiteware bowls



b

c

PLATE 10 -- Ceramics



View of Trench 2 and South Wall of Yard 4 from North

PLATE 11

Profile of South Wall of Trench 2

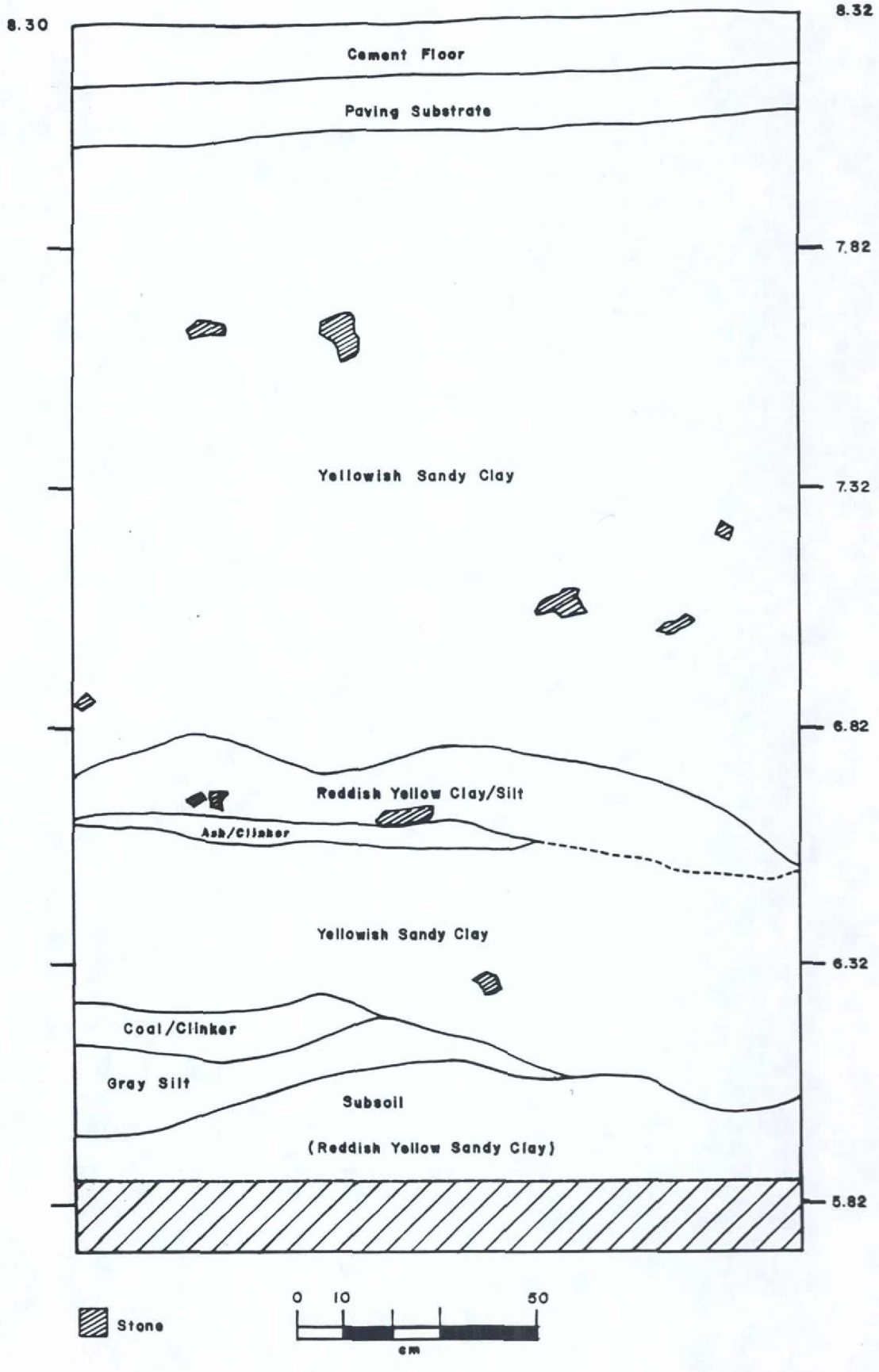
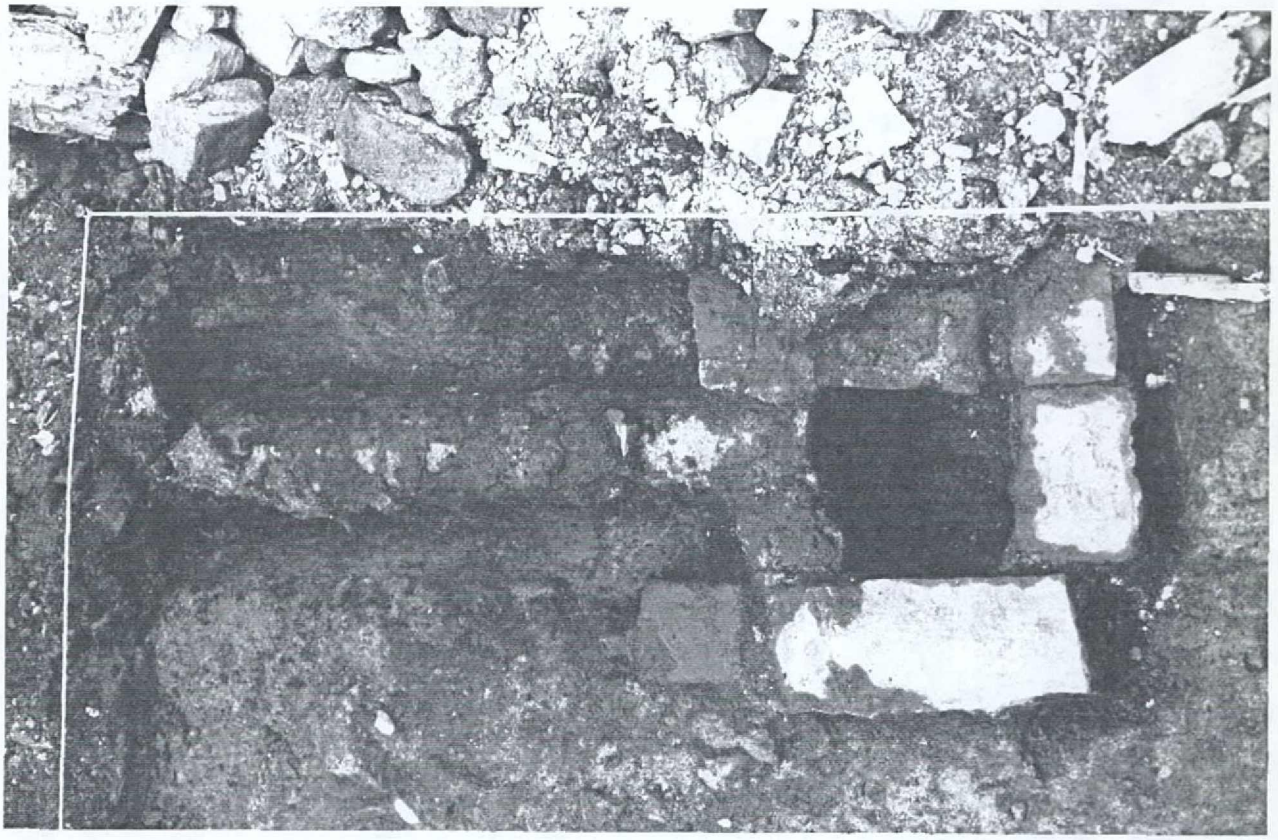


PLATE 12



Trench 2 -- drain and sump

PLATE 13

Profile of South Wall of Trench 3

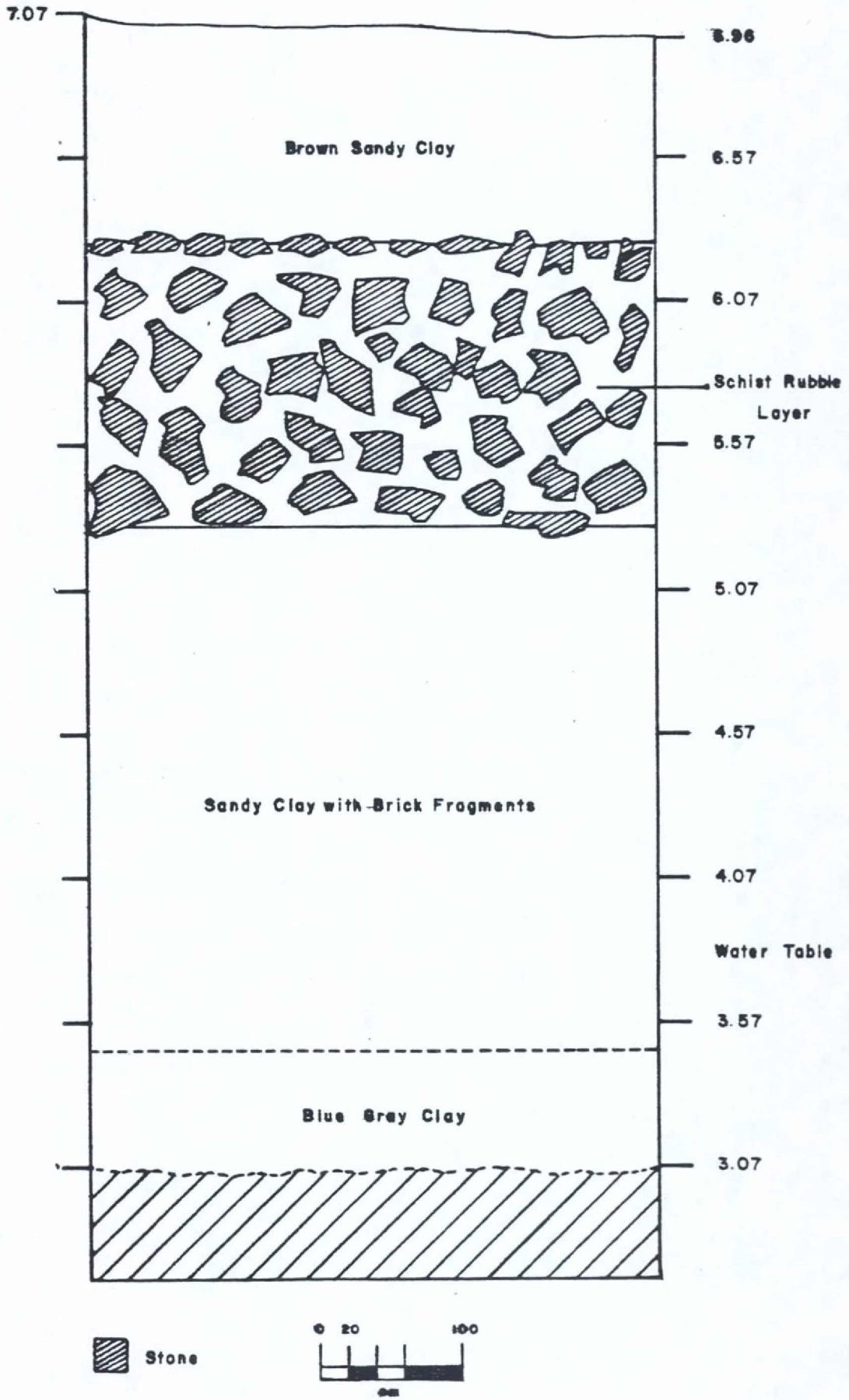


PLATE 14

Profile of South Wall of Trench 4

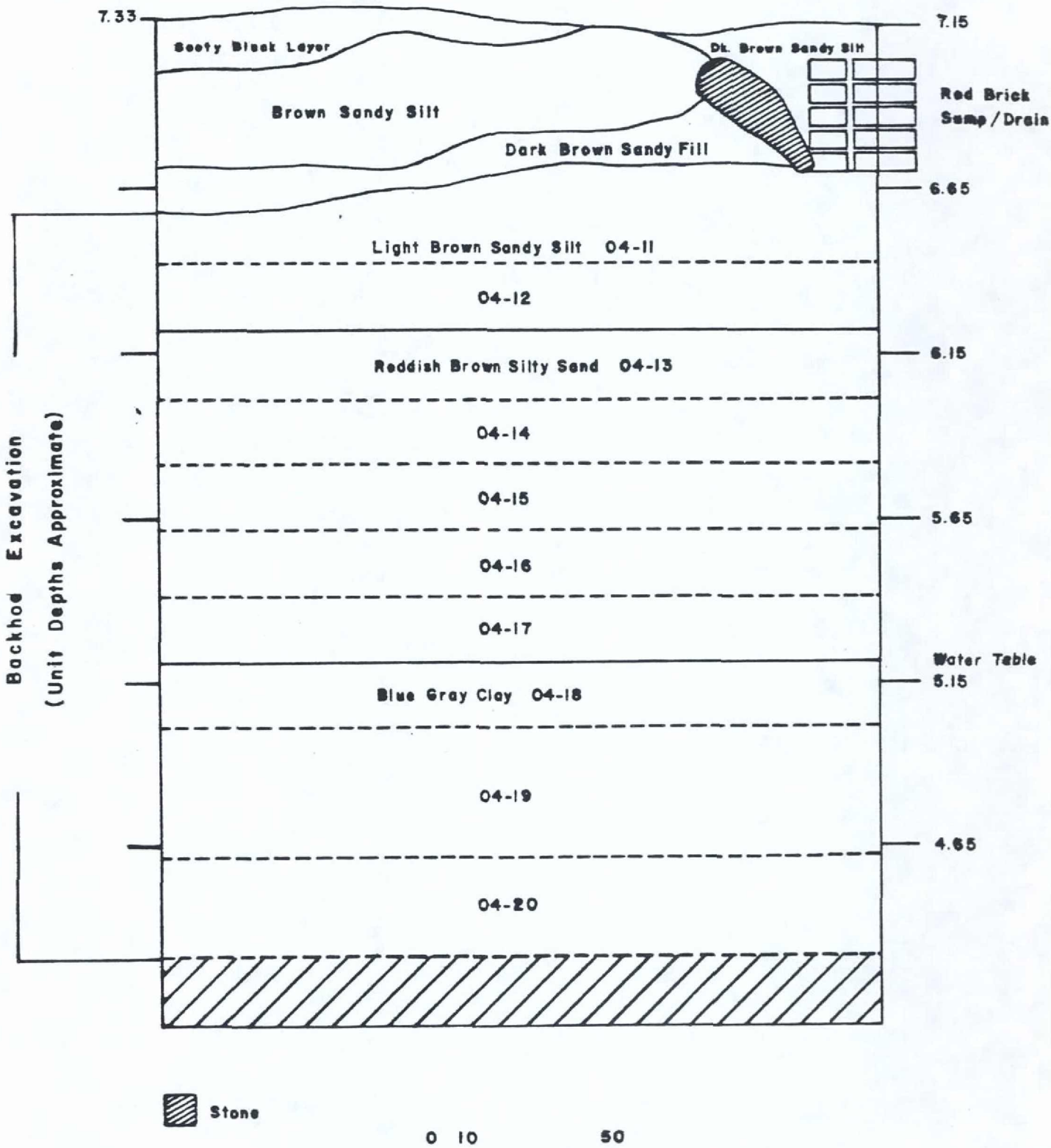


PLATE 15

Plan View of Trench 4

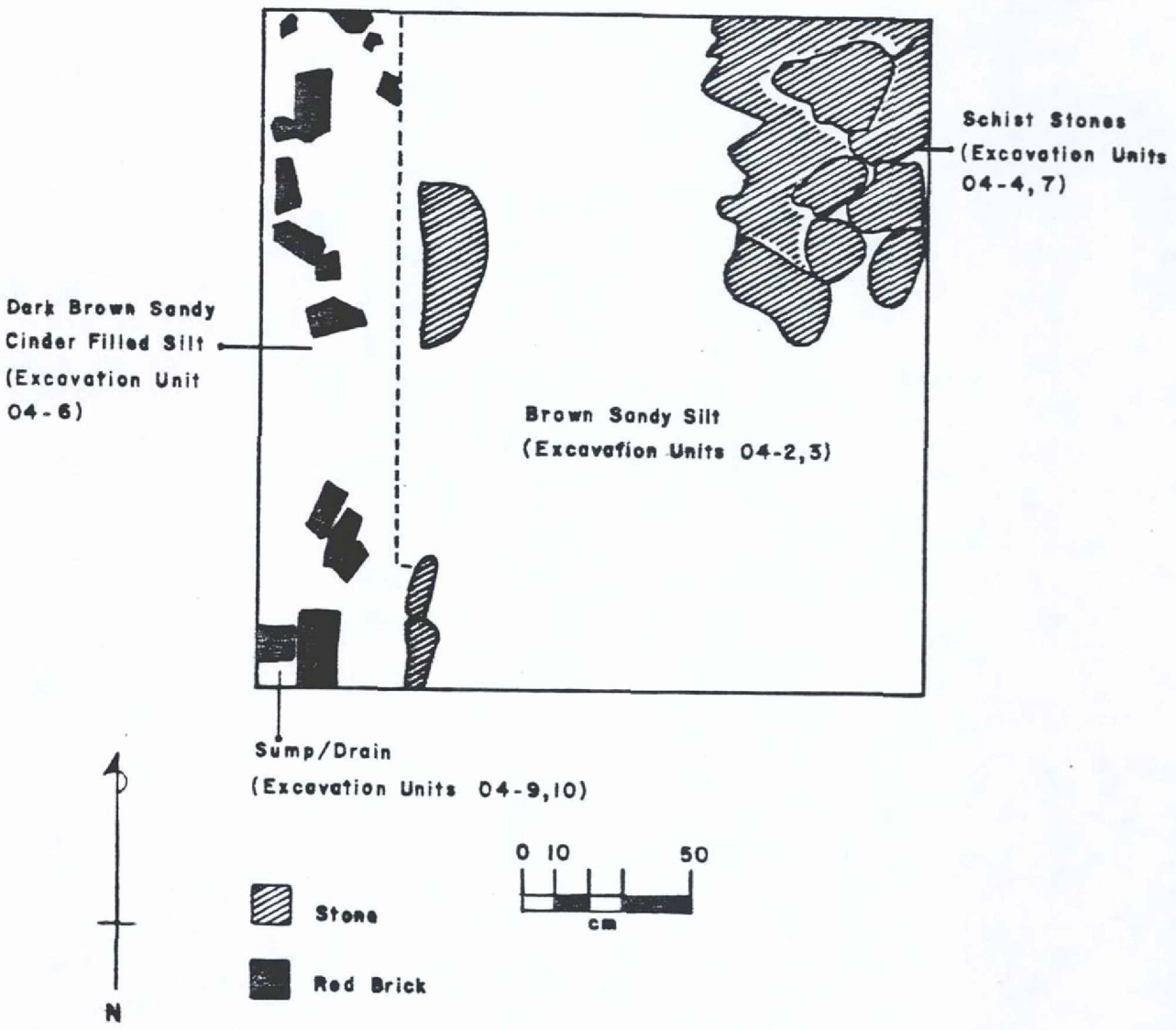
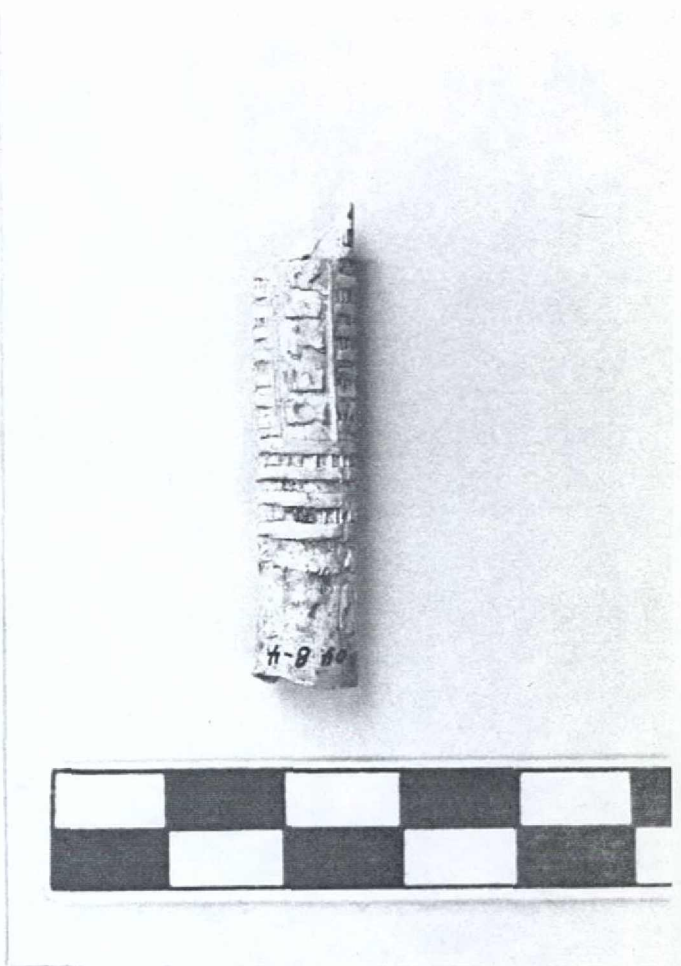
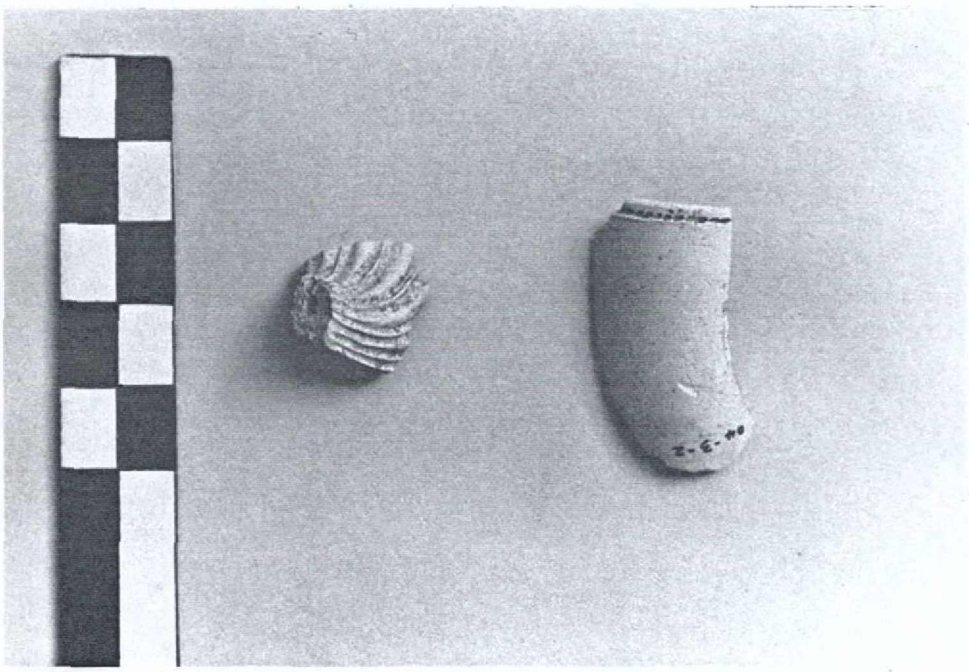


PLATE 16

a: 03-5-1

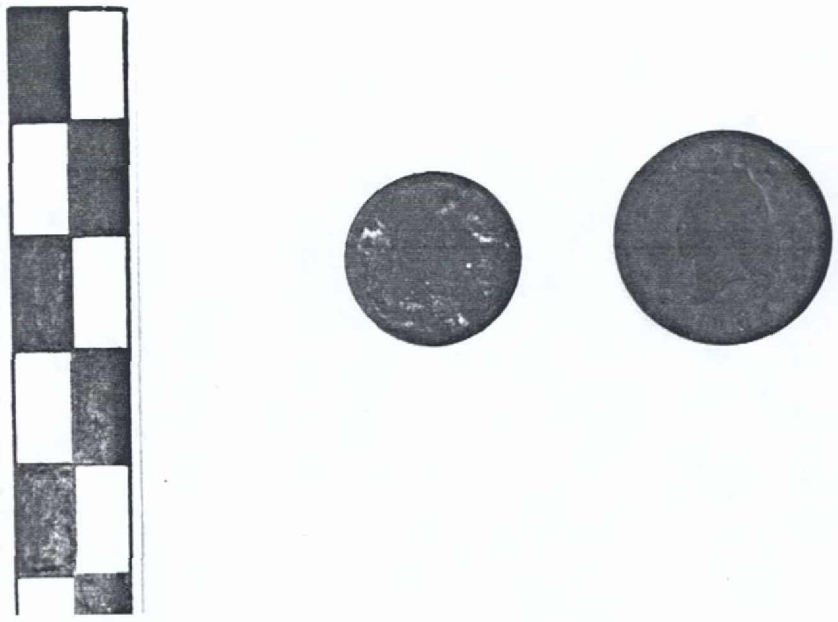


c: 04-8-4



b: 04-8-2 (left) 04-3-2 (right)

PLATE 17 -- Kaolin pipes



a: Obverses, 04-3-1 (left), 03-4-1 (right)

b: Reverses, 04-3-1 (left), 03-4-1 (right)

PLATE 18 -- Coins

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APPENDIX A

A Study of the Faunal Remains from the late 19th century site at 53rd and 3rd Streets on the Upper East Side of Manhattan, N.Y.C..

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This report summarizes the analysis of the first 19th century faunal assemblage to be recovered from an Upper East Side site in Manhattan. To date many lower East and West Side sites have yielded faunal assemblages from the 18th and 19th centuries, but only the 175 Water Street Site located in the Lower East Side of Manhattan has been described (Biddick 1982, Amorosi n.d., 1983, Gluck 1983). Consequently, the site at 53rd Street offers a unique opportunity to compare faunal data from the Upper and Lower East Side of Manhattan.

The faunal assemblage from the 53rd Street project was recovered in situ or by dry screening in the field through a 1/4 inch wire mesh. Flotation samples were taken in the field, but still remain to be analyzed. It was not possible to take pH samples in the field, because a soil pH meter was not available.

Methodology

There are a number of measures available to quantify the abundances of species in a faunal assemblage. The two measures of taxonomic abundance for use with archaeofaunas, Minimum Number of Individuals (MNI), and Number of Identifiable Specimens (NISP) are the most commonly preferred for quantification. However, there are a number of serious problems in conducting the quantification of taxonomic abundances.

Both MNI and NISP counts are dependent on such factors as differential preservation of bone, recovery bias, sample size, and even the nature of the deposit. The faunal sample from 53rd Street is well preserved, of small sample size, and mostly deposited as secondary kitchen refuse. This poses serious problems for the use of MNI counts. MNI methods require a larger sample size, but more importantly the faunal sample should be derived from deposits of a primary nature, such as a bison kill site (Lyman 1982, Grayson and Thomas 1983). Only with this type of situation can one be fairly certain as to how many individuals are represented in a faunal assemblage. There is another problem with MNI counts, that is MNI does not meet the requirements of the tests of reliability ("if I measure it again, do I get the same results") and validity ("am I counting what I think I am counting" -- Grayson 1973, 1978, 1979, 1983). MNI methods are highly variable in the manner in which bone elements can be counted. Two independent

observers estimating the minimum number of individuals from a bone sample can, and often do end up with different results. Therefore, the use of the analytical techniques of MNI will not be undertaken for this analysis.

NISP methods are not as dependent on large sample size, nor the nature of the deposit. These methods meet the requirements of the tests of relaiability and validity, and carry virtually all the information embodied by minimum numbers. Therefore, the use of NISP counts will be used for this analysis. However, one still must be cautious in further statistical manipulations of this data for inter-site comparison (Grayson 1978, 1979).

The faunal assemblage was identified by direct comparison with modern skeletal material from the collections of the American Museum of Natural History, the Faunal Laboratory at Hunter College (C.U.N.Y.), and the author's private collection. Faunal manuals used as supplementary references were Schmid (1972), Burt and Grossenheider (1976), Casteel (1976), Olsen (1979, 1980), Gilbert (1980), Gilbert et al. (1981), and Hall (1981). All faunal material that was identified to either the order or species level was numbered on a base coat of clear nail polish. The number included the trench number, and the unit number, i.e. 03-2. In the case of the cat burial (see page 5), only the catalog number was used.

The measurement of bone is essential in the documentation of any zooarchaeological collection. Measurements were taken with a dial caliper, which is accurate to .1 mm. at approximately 70 degrees Fahrenheit. All measurements are based on von den Driesch (1976), and presented in Table 1.

Account of Species

A total of 834 faunal remains was recovered from trenches 01, 02, 03, and 04. Of these remains 92 were identified to the order and species level. The remaining 742 elements were too fragmentary for such indentification. The latter were assigned only to the class level (see Tables 2 and 3). The distribution of species by stratum unit is presented in Table 4. The stratigraphy of the site is dated on the basis of chronological implications of associated building structures and artifacts, not by absolute methods. For temporal associations of the strata

see Winter's text in this volume.

Class Pisces - Fish

Material: 1 dentary, 3 vertebrae.

Remarks: Four vertebrate remains have been assigned to the class Pisces. Although further work with a comparative collection is needed, two of the vertebrae might tentatively be identified to the Gadiformes -- Cods (01-28.4, 647; 04-8.5, 807), while the last vertebra might conditionally be assigned to Pleurotremata -- Sharks (03-5.9, 209). However, because so few remains were recovered, little can be said about the role these fish played at 53rd Street.

Class Aves - Birds

Order Galliformes - Gallinaceous Birds
(Turkeys and Chickens)

Material: 1 furcula fragment, 1 femur fargment.

Remarks: Two avian remains could not be assigned to either Meleagris gallopavo or Gallus gallus due to their fragmentary state. Therefore, both bones were assigned to the order of Galliformes.

Family Meleagrididae

Meleagris gallopavo -- Domestic Turkey

Material: 1 vertebra, 1 thoracic phalanx, 3 radii.

Remarks: The domestic Turkey, Meleagris gallopavo, is the second most numerous avian species encountered. Unfortunately, the sample of Meleagris is too small to make any definitive statements other than to note the presence of the species at 53rd Street.

Family Tetraonidae

Gallus gallus -- Domestic Chicken

Material: 5 coracoids, 5 scapulae, 3 humeri, 6 radii, 2 ulnae, 2 carpometacarpals, 1 thoracic vertebra, 1 femur, 1 tibiotarsus, 3 pelvic first phalanges.

Remarks: The remains of the Chicken, Gallus gallus, are by

far the most common avian remains encountered. It was not uncommon to keep chickens in backyards as a source of food. However, it is impossible to state if residents were raising chickens, or if the chickens were bought at market. The distribution of remains are more numerous in trench 01, but no distinct pattern of distribution could be ascertained.

Class Mammalia - Mammals

Order Carnivora

Family Canidae

Canis familiaris -- Domestic Dog

Material: lumbar vertebrae 3-7, fragmentary sacral vertebrae, 8 caudal vertebrae, Rt. and Lt. ilia, Rt. and Lt. ischia, Rt. and Lt. femora, Rt. and Lt. tibiae, Rt. and Lt. fibulae, Rt. and Lt. calcanea, Rt. and Lt. astragali, 5 tarsals, 8 Rt. and Lt. metatarsals 2-5, 14 phalanges.

Remarks: A dog burial was recovered from trench 03, Unit 5. Based on the dating of associated building structures and artifacts in trench 03, the burial can be dated from the late 19th century to present day, 1870s-1980. However, no artifacts can be directly associated with this burial. It would seem that the dog was a pet, belonging to the residents in the building in Lot 44 at 210 East 54th Street, adjoining the backyard were trenches 03 and 04 where located.

The cause of death could not be determined from the existing skeletal material. However, the animal's age at death is estimated to be older than 18 months, as derived from the state of epiphyseal closure in the skeleton (Schmid 1972, Brunni and Zimmerl 1951, Lesbre 1897). Also, pathological lesions on the processes articularis craniales and caudales on a caudal vertebra (6th ?) were noted. Although the pathology might be related to the cause of death, the causal agent for the lesions still remains to be determined.

Family Felidae

Felis catus -- Domestic Cat

Material: Lt. upper canine, Rt. lower canine, Rt. and Lt. tympanic bulla and petrous portions, Rt. corpus of mandible, 1 lumbar vertebra, 5 caudal vertebrae, Rt. and Lt. humeri,

Rt. and Lt. proximal ulnae, Rt. head of radius, Rt. ilium, Rt. and Lt. femora, Rt. and Lt. tibiae, Rt. and Lt. calcanea, Rt. and Lt. astragali, 8 Rt. and Lt. metatarsals 2-5, 10 long bone fragments, 2 flat bone fragments.

Remarks: A cat burial was also encountered in trench 03, Units 2, 4 and 5. The burial is poorly preserved, without any artifacts directly associated with the skeleton. The burial is dated from the late 19th century to present day, 1870s-1980, as derived from data determined by associated trench 03 artifacts and building structures. This animal would also seem to be a pet of the residents in the building in Lot 44 at 210 East 54th Street.

Although the cause of death could not be determined, the age of the individual is estimated to be less than 12 months. This estimate is derived from the state of epiphyseal closure in the skeleton (Walker 1982), and the dental wear of the canines. Because the skeletal material was so poorly preserved, determination of skeletal health patterns cannot be made.

Order Artiodactyla

Family Tayassuidae

Sus scrofa -- Domestic Pig

Material: 2 cranial fragments, 1 isolated lower premolar 2, 2 ulnae, 3 ribs, 1 metatarsal, 1 calcaneus, 1 astragalus, 1 carpal/tarsal, 2 first phalanges, 2 second phalanges, 2 third phalanges.

Remarks: Eighteen bone elements of the domestic Pig, Sus scrofa, were recovered at 53rd Street. The pig remains were scattered throughout the site, with no apparent pattern of distribution.

Family Bovidae

Bos sp. -- Cattle

Material: 1 scapula fragement, 1 radius fragment, 3 femora, 1 ilium, 1 ischium, 1 tibia fragment.

Ovis/capra -- Sheep/Goat

Material: 5 humeri, 2 radii, 1 ulna, 2 thoracic vertebrae, 2 lumbar vertebrae, 4 ribs, 1 innominate, 3 femora, 2

tibiae, 1 second phalanx.

Remarks: The cow, Bos sp., and sheep/goat, Ovis/Capra are the two representatives of this family. The remains of these species are scattered throughout the site showing no clear pattern of distribution.

Order Primates

Family Hominidae

Homo sapiens sapiens -- Human

Bobbi L. Brickman

A human finger was recovered in trench 03, Unit 2 (see Table 4). The bone has been identified as the proximal phalanx of either digit 3 or 4. Based on observation and comparison with other specimens, the bone appears to be from the left hand. It is impossible to definitively age the bone, other than to state that from its overall size and appearance, the bone can be categorized in the adult age range.

The phalanx is worn, exhibiting the heaviest wear through the periosteum on the proximal anterior aspect and the distal end. This is suggestive of post depositional transport prior to the excavation at 53rd Street.

Aging of the Sample

The assessment of osteological age in any animal population relies on a number of factors linked to the growth and development of bone. Age profiles for Gallus gallus, Sus scrofa, Bos sp., and Ovis/Capra were constructed by recording the stage of ossification in long bones. The results of constructing such profiles are to found in Table 5.

There is no information by which to age Gallus gallus osteologically, therefore broad age categories were applied. Lesbre (1897), Brunni and Zimmerl (1951), Smith (1966), Silver (1969), and Schmid (1972) were used for assessing epiphyseal fusion in Sus scrofa, Bos sp. and Ovis/Capra. If a specimen could not be aged, it was assigned to two broad

age categories. These were defined as:

Juvenile -- The bones of a juvenile are mineralized with a smooth, hard surface. The epiphyses of long bones are proportional in size to the diaphysis, but have not begun to fuse to the diaphysis.

Adult -- The epiphyses of long bones have used, and areas of muscle attachment can be prominent.

Discussion

The sample size at 53rd Street is small, making the interpretation of the age profiles difficult. Although patterns are observable, the small sample size might not reflect the true nature of the bone assemblage and make the resulting data tentative. Therefore, the reader is advised to apply extreme care in using this data for inter-site comparison.

The age profile for Gallus indicates that adult individuals were clearly preferred over juveniles. This would imply that Gallus was not only being exploited for meat and grease, but possibly for eggs. Although the avian fauna from the downtown site of 175 Water Street was reported by Gluck (1983), no comparative data was indicated. Therefore, the age profile for Gallus might be indicative of a late 19th century uptown pattern.

The age profile for the pig, cow, and sheep/goat are graphed in figure 1. These age profiles indicate that the majority of the domesticates (pig, cow, and sheep/goat) sample were killed within the first 30 months of life, 83.3% for the Sus age profile, 100% for Bos, and 55% for the Ovis/Capra age profile. A pattern such as this would indicate that the residents at 53rd Street were involved in an urban meat economy. Such an economy would seem to exert a strong preference for the younger segments of the major mammalian domesticates. Biddick (1982) has reported a similar situation for the domesticates at the Lower East Side site at 175 Water Street.

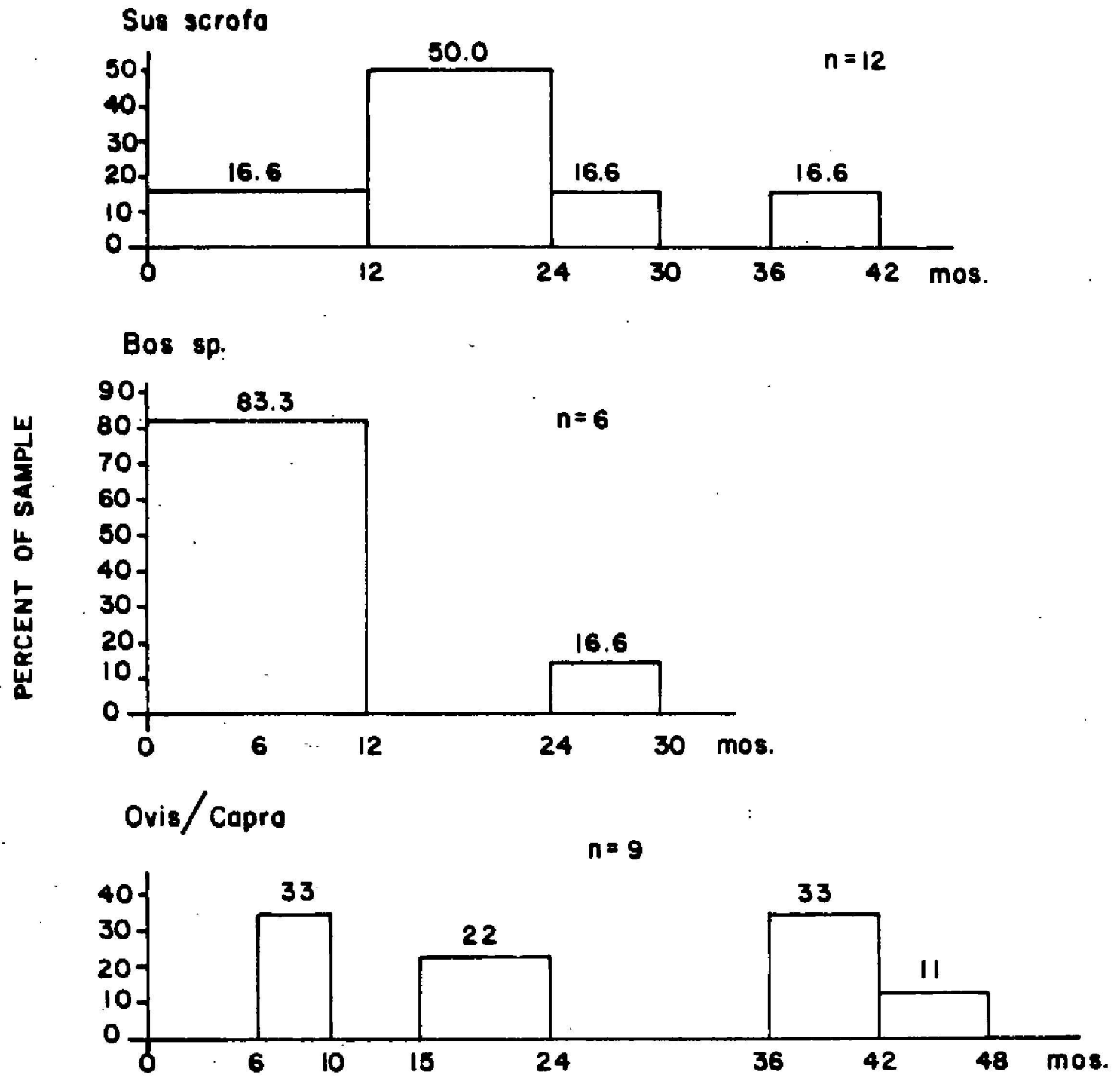
The mortality pattern for Sus contains a large young segment in its age profile. Pigs are considered prime for meat production by 8-10 months (Biddick 1982:46), and the

pig age profile at 53rd street attests to this. Suckling pigs and younger pigs, those killed within the first two years, were clearly preferred. Between 36-42 months, adult pigs are starting to appear in the mortality pattern. This would indicate that pork was also consumed. It would seem that adults, both boars and sows, were locally allowed to reach maturity for reproductive purposes.

In the first 30 months of the bovid mortality pattern, a bimodal pattern appears. There is a high percentage of infants and juveniles being killed between 6-12 months of age (83.3% for Bos and 33% for Ovis/Capra), and a second peak occurs between 15-30 months. Both sheep/goat and cattle indicate a slight peaking in their mature age clusters (30+ months), which would mean that mutton and beef were also consumed.

The age profiles observed for the bovid samples at 53rd Street and 175 Water Street raise a number of questions as to how the urban meat market might have competed with the local wool and dairy industries. The sheep/goat age profile indicates a population that would be counter productive to wool production. There would seem to be competing interests for farmers to raise cattle for dairy and meat. Young males are often culled at an early age in diary systems. Old cows, those beyond producing milk, provide a source of meat. In contrast, a meat economy often culls immature males and females for veal, and older individuals are taken for beef. The question of how oxen were used as draft animals only serves to make matters more complex. Therefore, the interaction between the Manhattan meat markets and the nature of regional husbandry requires further investigation.

Figure 1, Age Profiles for Mammalian Domesticates.



Butchering Patterns

The sample of avian and mammalian domesticates recovered from 53rd Street exhibited a distinct pattern of butchering. When research first began on this assemblage, it was uncertain if the butchering patterns observed by Lyman (1977) and Biddick (1982) could be applied to the faunal sample at 53rd Street. Both these studies indicated that cows, sheep/goat, and pigs were obtained in a butchered form. The butchering pattern at both sites, the Fort Walla Walla Dump in Washington State (Lyman 1977), and the 175 Water Street in New York City (Biddick 1982), are different from that followed today. These differences in the butchering pattern can be influenced by a number of factors such as regional preferences for certain meat cuts, and technological innovations of the meat industry. One would expect butchers to be more technologically advanced in the large urban centers of the Eastern United States than in Western military posts as reported by Lyman (1977) during the late 19th and early 20th century. However, in spite of these factors, the analysis of the 53rd Street sample demonstrated the same basic pattern illustrated in Lyman (1977) and those discussed by Biddick (1982).

There is evidence for the use of at least two types of saws used to cut carcasses. One, probably a fine tooth saw, left extremely finely spaced tooth marks or straie on the bone. The other, probably a course saw, left very distinct widely spaced saw tooth marks on the bone surface. The use of an ax/cleaver is also evident in the bone sample. Many of these chop marks do not correspond for the most part with the saw cuts. It would seem that the use of an ax/cleaver was only for special purposes, such as cutting into and opening up the tough synovial cavity of the knee. Otherwise, this tool was not used for cutting up the carcass.

The frequency of bone elements provides some insight into the preferences for different cuts of meat. The remains of Gallus (n=29) demonstrates a clear cultural preference for wings over legs, with 19 wing bone fragments or 65.5% of the sample, and 5 leg bone fragments or 17.2% of the chicken sample. In the pig sample, foot bones (metapodials, carpals/tarsals, calcanea, astragali, and phalanges) are the most common, comprising 55.5% of the sample (10 bone elements out of a sample of 18). This would suggest a preference for pig's feet and knuckles. The cattle sample (n=8) although small in size, does indicate that hindlimbs were preferred, with 5 hindlimbs or 62.5% of

the Bos sample. The frequency of forelimbs and hindlimbs in the sheep/goat sample (n=23) are nearly equal, with 8 forelimbs and 6 hindlimbs fragments, and 2 thoracic and 2 lumbar vertebrae. This indicates that there was no preference for any specialized cuts among sheep/goats.

The locations and orientation of the saw cuts are similar to the categories Lyman (1977) first proposed. While some saw cuts can be classed in Lyman's scheme, many more do not fit these categories. These differences can be explained by regional differences in butchering practices. The bone elements that match Lyman's scheme in Bos are 1f, scapula and 7d, radius. In Ovis/Capra the categories are 3j and k, rib and 6m, femur. Otherwise the patterns observed for Sus, Bos, and Ovis/Capra are similar, but the variation seen in the saw cuts preclude the use of Lyman's categories. Therefore, the patterns observed at 53rd Street are presented in figures 2, 3 and 4.

The butchering data avaialable from 53rd Street suggest that cow and sheep/goat were butchered in comparable manners. However, the relatively small sample size and scarce data on Bos butchering data make intensive comparisons with Ovis/Capra butchering patterns tentative. Also, the paucity of butchering information for Sus precludes comparing pig butchering data to cow and sheep/goat patterns. The patterns observed for the large size mammal fragment category was used to build a more complete butchering pattern for Bos, as was the medium size mammal fragment category used for Sus and Ovis/Capra.

In general, cows and sheep/goats were gutted, skinned, and the head and feet removed and discarded. Pigs were gutted, and skinned, but the head and feet were retained. Although there was only evidence for sheep/goats to be split into left and right halves, it would be logical to assume that the same procedure was used for pigs and cows. This would make the further butchering of these animals far easier.

There are a number of common meat cuts observed at 53rd Street. Prime rib was the most common cut. This would contain the dorsal or superior portion of the ribs and the attached split vertebrae. Forequarter cuts are also common, allowing brisket, stewing, soup, and knuckle cuts. Hindquarter cuts were common for the bovids only. The rump, and round cuts are the more common cuts as evidenced by innominates, femora shafts, and tibiae shaft fragments.

Distal tibiae and tarsal fragments were recovered, suggesting that the hind foot was commonly removed and discarded.

Figure 2, the pattern of butchered bone for Sus scrofa. The shaded area represents the archaeological specimen, the straight edged line indicates the actual saw cut location and orientation. a-b. ulna, c. metatarsal III, and d. rib.

Figure 2 illustration

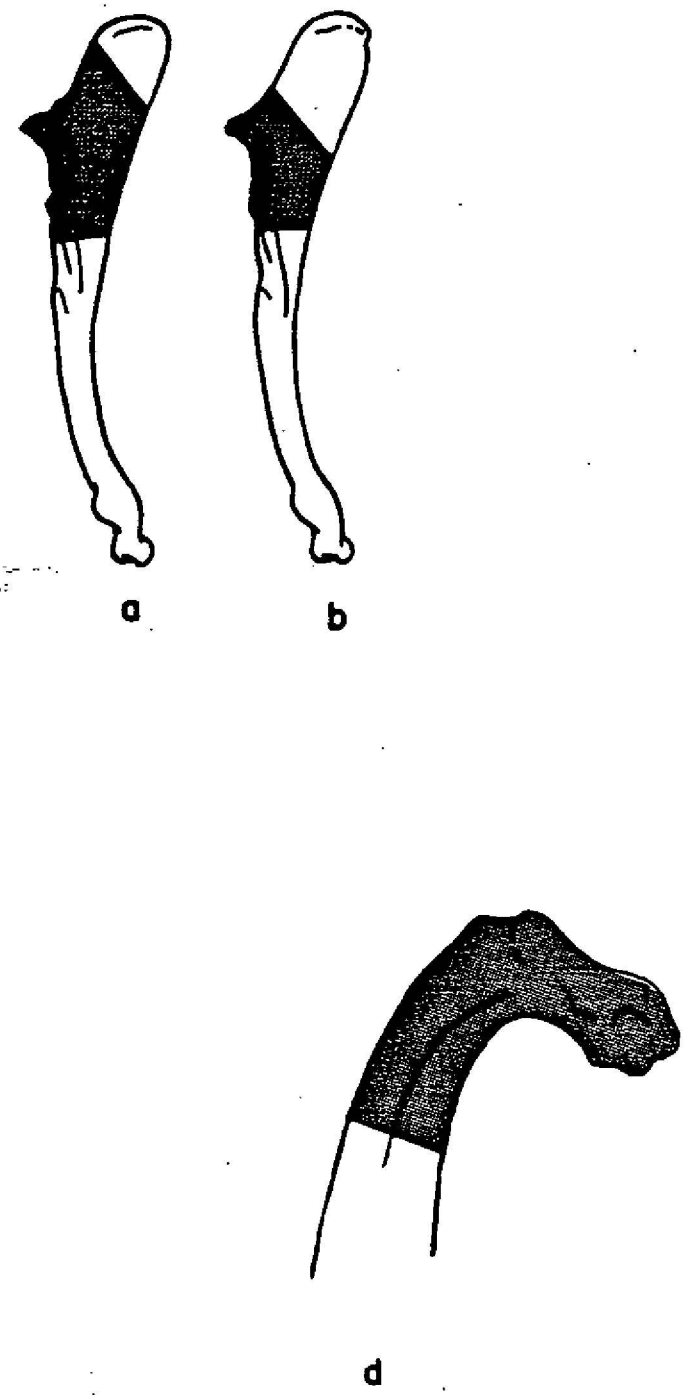


Figure 3, the patten of butchered bone for *Bos sp.*. The shaded area represents the archaeological specimen, the straight edged line indicates the actual saw cut location and orientation. a. scapula, b. radius, c-d. innominate, e. femur, and f. tibia.

Figure 3 illustration

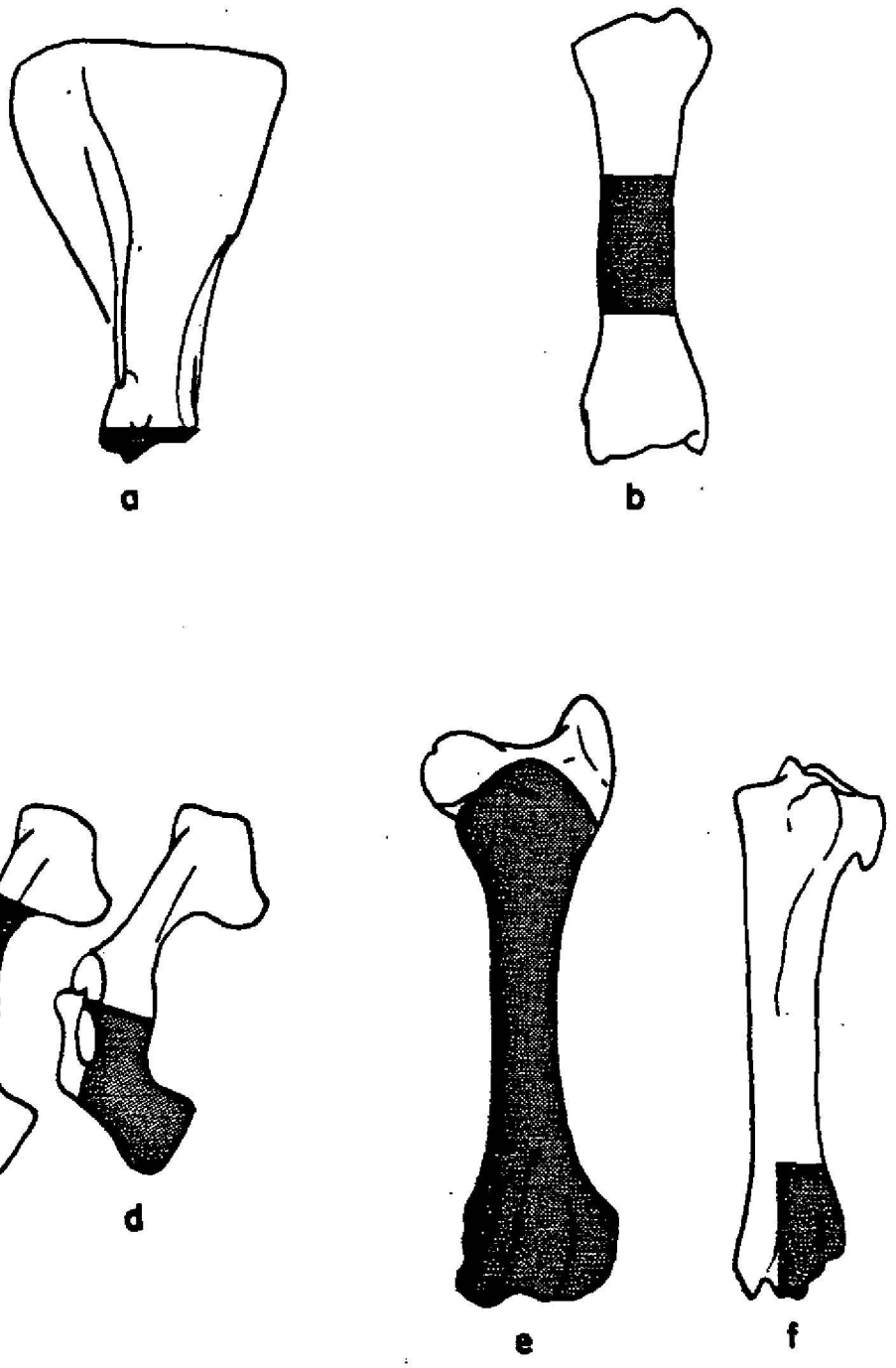
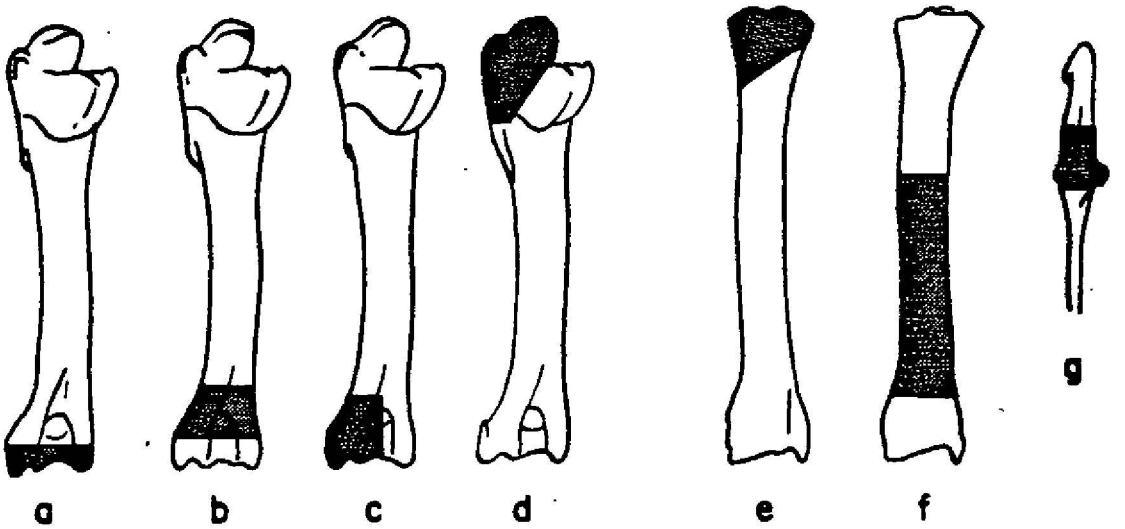
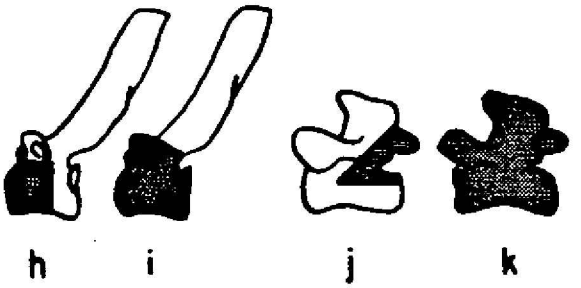


Figure 4, the pattern of butchered bone for Ovis/Capra. The shaded area represents the archaeological specimen, the straight edged line indicates the actual saw cut location and orientation. a-d. humerus, e-f. radius, g. ulna, h-i. thoracic vertebrae, j-k. lumbar vertebrae, l. innominate, m-n. femur, o. tibia. The arrow indicates the location of ax/cleaver chop marks.

Figure 4 illustration





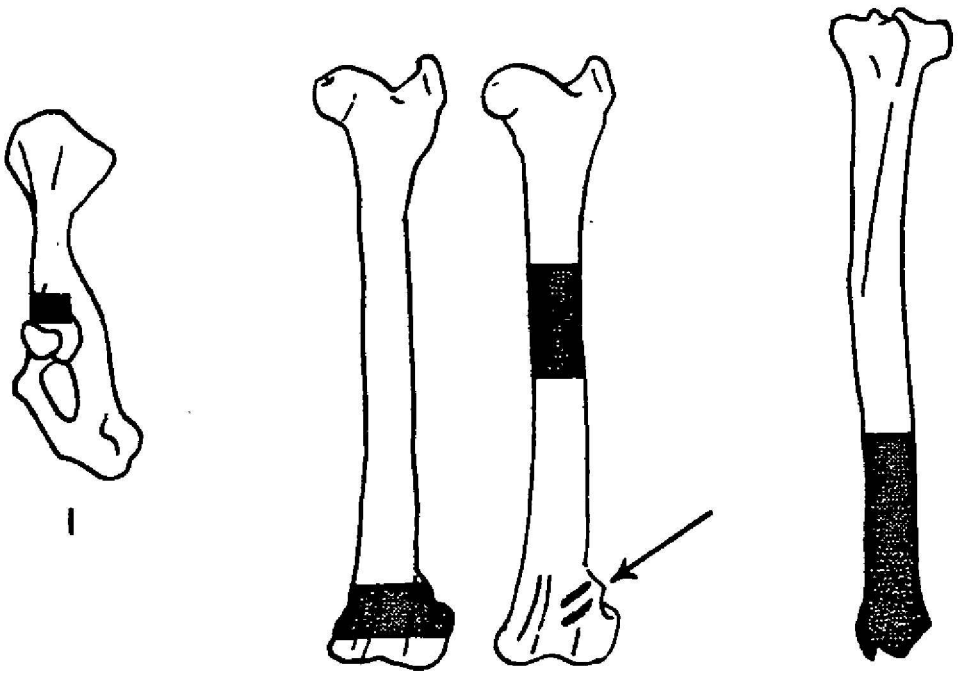


Figure 5, general pig butchering pattern inferred from archaeological faunal remains. The dotted lines are derived from the butchering pattern observed with the medium mammal size bone fragments.

Figure 5 illustration

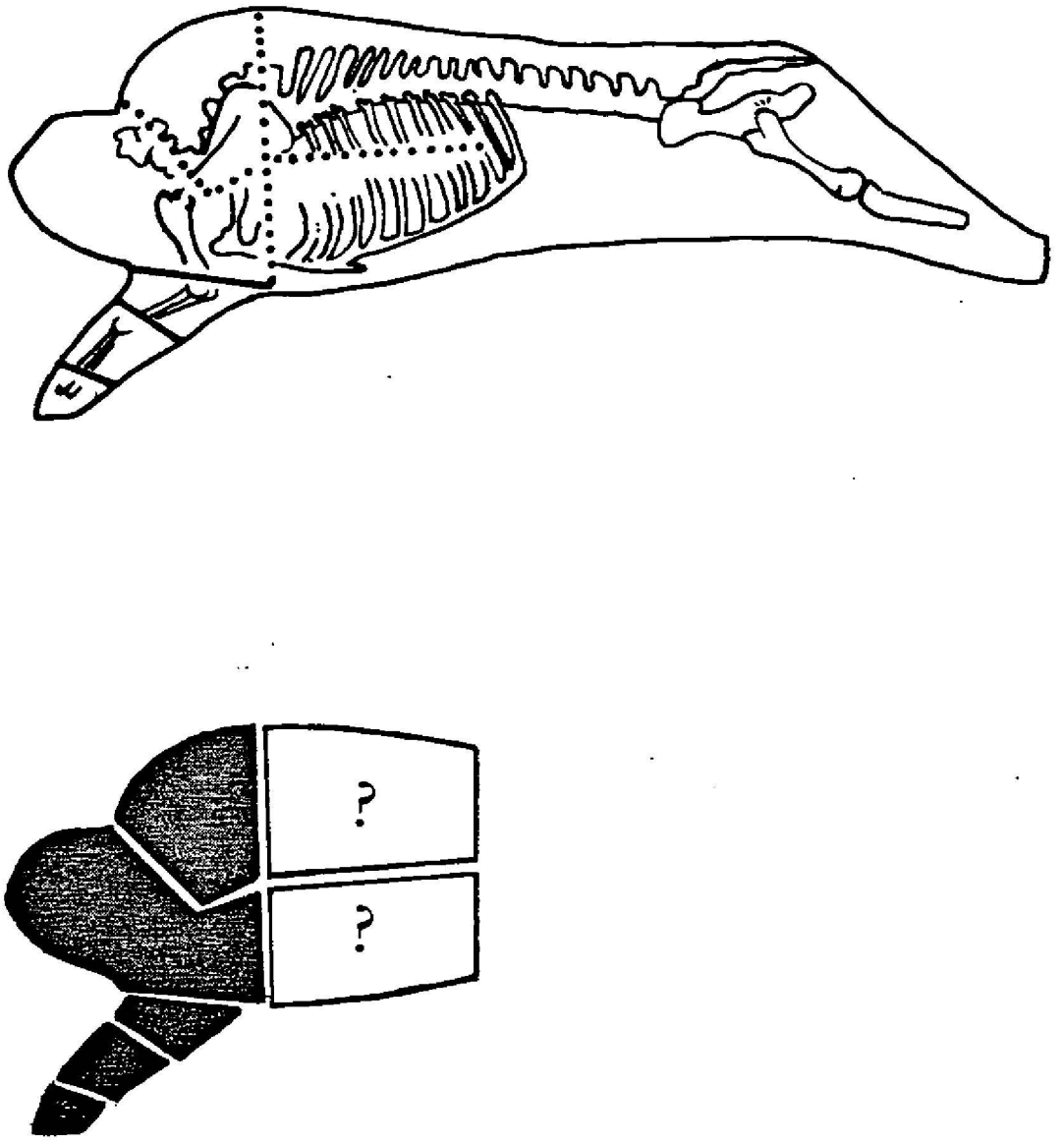
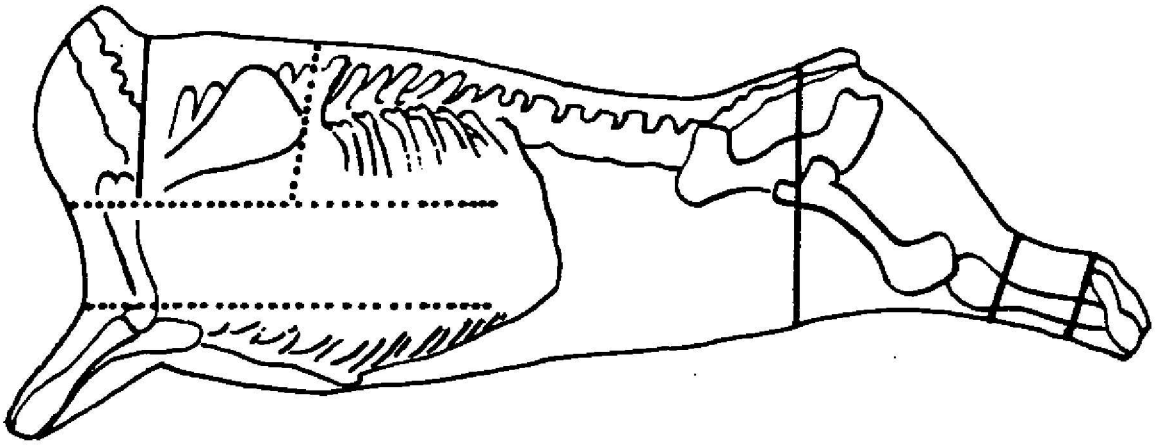


Figure 6, general cow butchering pattern inferred from archaeological faunal material. The dotted lines are derived from the butchering pattern observed with the large mammal size bone fragments.

Figure 6 illustration



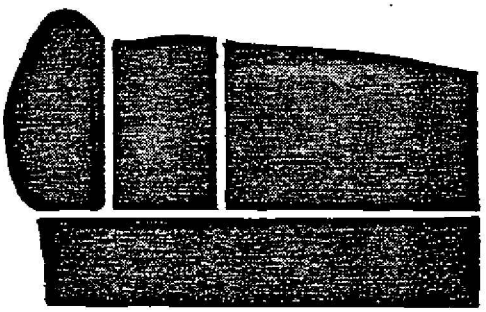
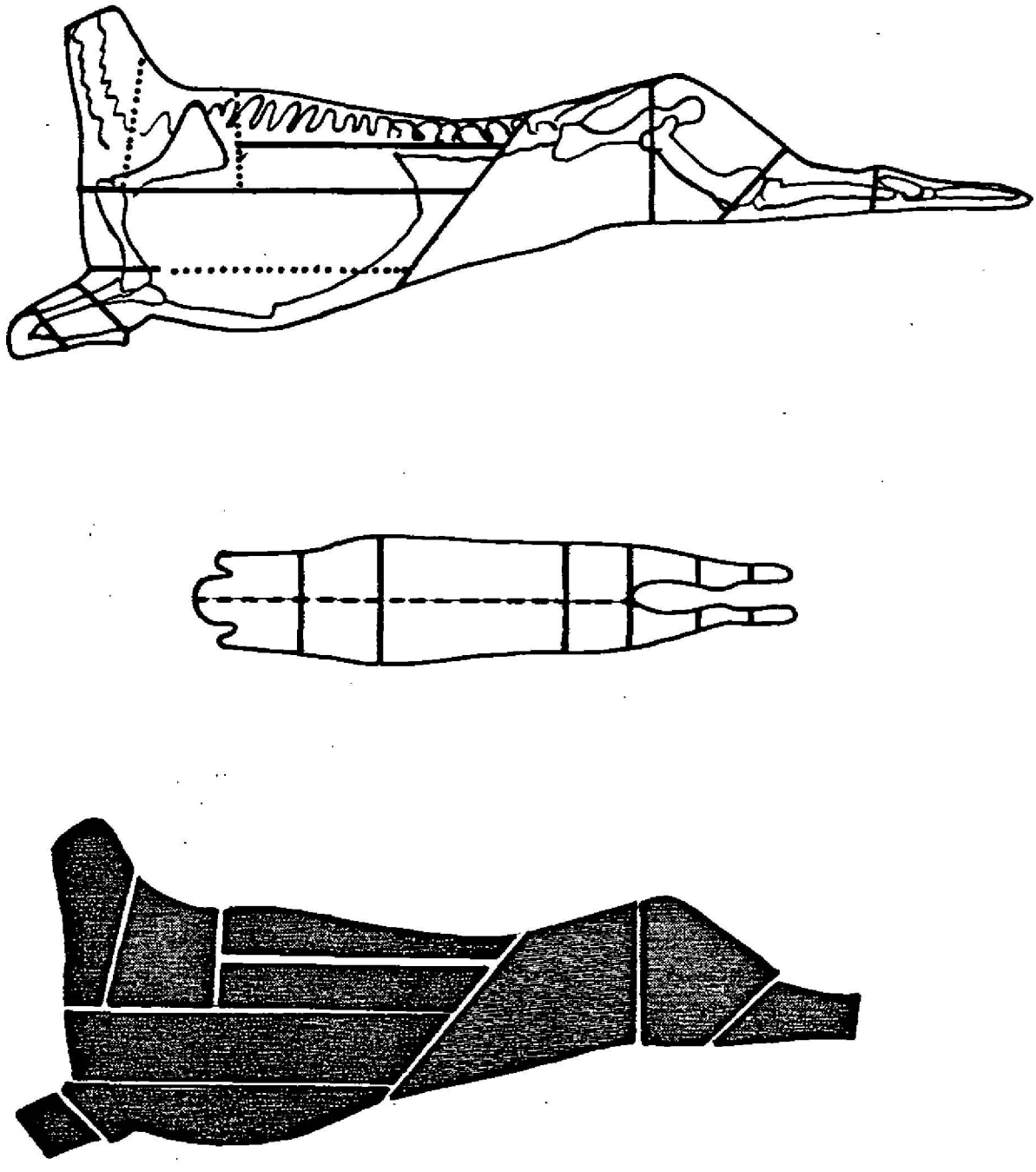


Figure 7, general sheep/goat butchering pattern inferred from archaeological faunal remains. The dotted lines are derived from the butchering pattern observed with the medium mammal size bone fragments.

Figure 7 illustration



Conclusions and Recommedations for Future Research

The faunal assemblage recovered from 53rd Street provides much needed information on the subsistence activities of the Upper East Side during the late 19th century in New York City. Of the species that were encountered, the cow, sheep/goat, pig, and chicken were the most economically signnificant. There is a strong cultural preference for young mammals, where Prime Rib and Forequarter cuts were the most common meat cuts observed. This would indicate that the urban meat market competed against the local wool and diary industries. The data presented here is similar to what Biddick (1982) reported for the 175 Water Street Site in Lower Manhattan. The data from both sites indicate a meat economy, where young animals are clearly preferred.

A data base for the measurement of animal bone does not exist for the New York City region. To date only one other zooarchaeological report that include the measurement of bone has been undertaken (Amorosi in press). However, combined with the metric data provided by the 53rd Street fauna, an opportunity to start such a data base exits. It is important that a standardized system of measurement be used for the compatibility of data. The measurement systems proposed by von den Driesch (1976), Saunders and Saunders (1978) for rodent long bones, and Musser (1979) for murid rodent skulls should be considered. Once a data base is established, more definitive statements on stature, relative health, and husbandry practices as inferred from stature could be made.

In the future, a strategy for the analysis of the flotation samples should be considered. Only the large (Bos to Equus in size) and medium (Ovis to Sus in size) sized animals were recovered by dry screening in the field. The micro-fauna which is missing might be contained in the flotation samples. If so, the analysis of the micro-fauna would add critical data about New York City fauna. To date only one unpublished work (Amorosi n.d.) has been concerned with archaeological micro-fauna in the New York City region. If more data were available, a more coherent picture about the role micro-faunas played in the 18th and 19th centuries could be made.

The wire mesh used in the flotation device should be of .30 mm. or smaller. Water can be used, although certain

chemical baths are reported to be better for flotation (Struever 1968, Watson 1976). The residue that is recovered should be dried, then screened by means of a series of graduated geological soil screens, .30 mm. and smaller. Afterwards, the heavy and light fractions obtained from the series of screens can be examined under a low power microscope for faunal material. This procedure should insure the recovery of smaller scale bone elements and the smaller scale animals, i.e. small fish, mammals, and repitles.

Soil pH should be monitored in the field via a soil pH meter rather than testing soil samples for pH in the laboratory. Soil samples examined for pH in the laboratory often have the problem of the pH changing due to the drying of the soil. When pH is taken in the field, pH can be measured as soils are uncovered, not allowing the soil to dry. Once a series of accurate pH readings are available, the analyst has some means to monitor the differential preservation of bone, and to predict the destructive rate of infant and juvenile faunal material (Gorden and Buikstra 1981).

Lastly, a more exacting means for the recovery of articulated animal burials should be considered. A great deal of valuable aging and stature information is often lost by present recovery techniques. Paleontological methods of recovery articulated skeletons in situ should be introduced. This will prevent the loss of aging and stature information and add much needed data to these topical areas in faunal analysis.

Table 1, Measurements.

Abbreviationms of Measurements

Aves:
(von den Driesch 1976)

Bb - basal breadth.
Bd - breadth of the distal end.
BF - breadth of the Facies articularis basalis.
Bp - breadth of the proximal extremity.
Dic - cranial diagonal.
Did - diagonal of the distal end.
GL - greatest length.
L - length from articular surface to articular surface.
Lm - medial length.
SC - smallest breadth of the corpus.

Mammalia:
(von den Driesch 1976)

Bd - breadth of the distal end.
BFcd - breadth of the Facies terminalis caudalis.
BFcr - breadth of the Facies terminalis cranialis.
Bp - breadth of the proximal end.
BPacd - breadth across the Processus articulares caudales.
BPacr - breadth across the Processus articulares craniales.
BPC - breadth across the coronoid process.
BPtr - breadth across processus transversi.
D1 - depth of the lateral half.
Dm - depth of the medial half.
DLS - diagonal length of the sole.
DPA - depth across the Processus anconaeus to the caudal border of the ulna.
GB - greatest breadth.
GL - greatest length.
GL1 - greatest length of the lateral half.
GLC - greatest length from caput femoris.
GLM - greatest length of the medial half.
GLPa - greatest length from the Processus articulares craniales.
GLpe - greatest length of the peripheral half.
H - height.
HFcd - height of the Facies terminalis caudalis.
HFcr - height of the Facies terminalis cranialis.
LA - length of the acetabulum.
Ld - length of the dorsal surface.
LS - length of the symphysis.

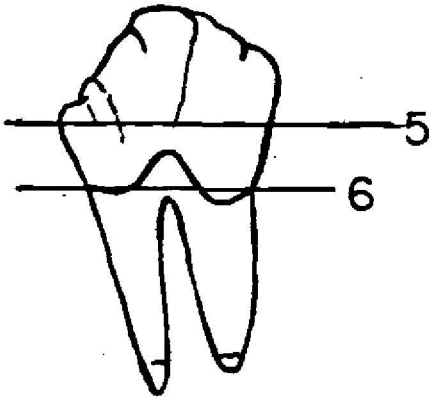
Table 1, Measurements.
(continued)
Abbreviation of Measurements

MBS - middle breadth of the sole.
PL - length of body.
SB - smallest breadth of the shaft of ilium.
SD - smallest breadth of the diaphysis.
SDO - smallest depth of the olecranon.

Measurements taken similarly to von den Driesch (1976)

1 - greastest length (GL).
2 - breadth of the proximal end (Bp).
3 - smallest breadth of the diaphysis (SD).
4 - breadth of the distal end (Bd).
5 - breadth at the enamel edge.
6 - breadth at the widest point.
7 - width at the enamel edge.

Illustrations of Measurements 5-7.



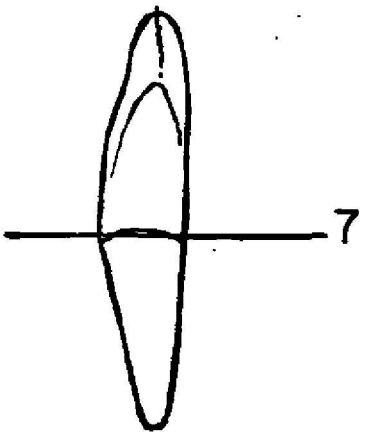


Table 1. Measurements.
(continued)
Measurements (all measurements are in millimeters)

AVES

Meleagris gallopavo

Radius shaft: -.
(01-31.1, 653)
SC - 5.8 mm.

Lt. thoracic phalanx I: -.
(01-35.24, 655)
GL - 21.5
L - 19.1

Distal radius: -.
(01-35.26, 655)
Bd - 9.6

Gallus gallus

Rt. distal coracoid: aged to an adult age range.
(01-35.23, 655)
Bb - 14.2
BF - 11.4

Lt. coracoid: aged to an adult age range.
(01-35.21, 655)
GL - 52.3
Lm - 51.4
BF - 8.8

Lt. distal radius: -.
(01-35.19, 655)
Bd - 7.0

Rt. radius: -.
(01-35.16, 655)
GL - 79.3
SC - 3.4
Bd - 7.5

Rt. scapula: -.
(01-35.13, 655)
Dic - 12.5

Table 1, Measurements.
(continued)
Measurements

AVES

Gallus gallus

Rt. scapula: -.
(01-35.12, 655)
  Dic - 11.0 mm.

Lt. carpometacarpus: -.
(01-35.11, 655)
  GL - 40.5
  Did - 8.2

Rt. coracoid: aged to an adult age range.
(01-31.9, 653)
  Bb - 13.6
  BF - 11.5

Distal radius: aged to an adult age range.
(01-31.8, 653)
  Bd - 8.9

Rt. carpometacarpus: -.
(01-31.5, 653)
  GL - 47.0
  Bp - 14.9
  Did - 7.5

Shaft of tibiotarsus: -.
(01-31.2, 653)
  SC - 9.2

Distal humerus: aged to an adult age range.
(01-34.2, 652)
  SC - 6.7
  Bd - 5.7

Radius: aged to an adult age range.
(01-trench cleaning.1)
  GL - 40.2
  SC - 4.9
  Bd - 8.5

Table 1, Measurements.
(continued)
Measurements

AVES

Gallus gallus

Pelvic phalanx I: aged to an adult age range.
(03-2.1, 204)
1 - 16.1 mm.
2 - 7.3
3 - 3.6
4 - 4.9

Distal humerus: aged to an adult age range.
(0-3-4.1, 206)
Bp - 18.6

Pelvic phalanx I: aged to an adult age range.
(03-4.2, 206)
1 - 23.3
2 - 7.4
3 - 4.4
4 - 5.3

Distal ulna: aged to an adult age range.
(04-8.6, 807)
Did - 8.3

Pelvic phalanx I: aged to an adult age range.
(04-2.4, 801)
1 - 24.5
2 - 9.4
3 - 4.5
4 - 7.1

MAMMALIA

Canis familiaris (burial)

4th lumbar vertebra: aged older than 18 months.
(03-5, 209)
PL - 19.6
GLPa - 26.1
BPacr - 16.6
BPacd - 13.0
BFcr - 15.2

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris (burial)

4th lumbar vertebra: aged older than 18 months.
(03-5, 209)
- BFcd - 14.7 mm.
- HFcr - 9.9
- HFcd - 8.9
- H - 23.2

5th lumbar vertebra: aged older than 18 months.
(03-5, 209)
- PL - 20.4
- BPacd - 11.4
- BFcr - 12.9
- BFcd - 13.7
- HFcr - 8.4
- HFcd - 8.4

6th lumbar vertebra: aged older than 18 months.
(03-5, 209)
- PL - 21.9
- GLPa - 29.4
- BPacr - 17.0
- BPacd - 11.1
- BFcr - 8.4
- BFcd - 8.5
- HFcr - 8.1
- HFcd - 8.1

7th lumbar vertebra: aged older than 18 months.
(03-5, 209)
- PL - 22.5
- GLPa - 29.8
- BPacr - 16.8
- Bpacd - 11.5
- BFcr - 14.9
- BFccd - 14.9
- HFcr - 8.0
- HFcd - 8.1
- H - 24.2

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris (burial)

Caudal vertebra (1st ?): aged older than 18 months.
(03-5, 209)
PL - 17.4 mm.
GLPa - 12.7
BPacr - 9.5
BPacd - 5.7
BPtr - 17.4
BFcr - 7.0
BFcd - 7.0
HFcr - 5.0
HFcd - 5.0
H - 9.1

Caudal vertebra (2nd ?): aged older than 18 months.
(03-5, 209)
PL - 17.1
GLPa - 10.7
BPacr - 10.0
BPacd - 6.7
BFcr - 9.0
BFcd - 8.0
HFcr - 5.0
HFcd - 4.5
H - 10.3

Caudal vertebra (3rd ?): aged older than 18 months.
(03-5, 209)
PL - 8.2
GLPa - 11.9
BPacr - 9.8
BPacd - 5.4
BFcr - 7.0
BFcd - 7.0
HFcr - 4.5
HFcd - 5.0
H - 9.0

Caudal vertebra (4th ?): aged older than 18 months.
(03-5, 209)
PL - 7.5
GLPa - 11.5

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris (burial)

Caudal vertebra (4th ?): aged older than 18 months.
(03-5, 209)
BPacr - 6.0 mm.
BFcr - 7.0
BFcd - 7.0
HFcr - 4.5
HFcd - 4.5
H - 9.5

Caudal Vertebra (5th ?): aged older than 18 months.
(03-5, 209)
PL - 11.1
GLPa - 13.2
BPacr - 8.7
BPacd - 2.6
BFcr - 7.0
BFcd - 7.0
HFcr - 6.0
HFcd - 6.0
H - 7.7

Caudal vertebra (6th ?): aged older than 18 months.
(03-5, 209)
PL - 13.8
GLPa - 14.4
BPacr - 7.8
BPacd - 3.6
BFcr - 6.5
BFcd - 6.5
HFcr - 5.0
HFcd - 4.0
H - 7.0

Caudal vertebra (7th ?): aged older than 18 months.
(03-5, 209)
PL - 16.6
GLPa - 16.2
BPacr - 7.5
BPacd - 2.9
BFcr - 7.0
BFcd - 7.0

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris (burial)

Caudal vertebra (7th ?): aged older than 18 months.
(03-5, 209)
HFcr - 6.0 mm.
HFcd - 5.0
H - 7.1

Caudal vertebra (8th ?): aged older than 18 months.
(03-5, 209)
PL - 20.2
GLPa - 18.9
BPacr - 6.0
BPacd - 4.4
BFcr - 6.0
BFcd - 8.0
HFcr - 6.0
HFcd - 6.0
H - 7.1

Lt. ilium: aged older than 18 months.
(03-5, 209)
SB - 6.8

Lt. femur: aged older than 18 months.
(03-5, 209)
SD - 9.5
Bd - 20.2

Rt. femur: aged older than 18 months.
(03-5, 209)
GL - 110.3
GLC - 109.9
Bp - 22.7
DC - 10.2

Rt. femur: aged older than 18 months.
(03-5, 209)
SD - 9.6
Bd - 20.6

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris (burial)

Lt. patella: aged older than 18 months.
(03-5, 209)
GL - 15.1 mm.
GB - 10.5

Rt. patella: aged older than 18 months.
(03-5, 209)
GL - 15.3
GB - 10.3

Lt. tibia: Aged older than 18 months.
(03-5, 209)
GL - 118.5
Bp - 22.6
SD - 8.4
Bd - 15.4
Dd - 11.2

Rt. tibia: aged older than 18 months.
(03-5, 209)
GL - 118.0
Bp - 22.7
SD - 8.3
Bd - 15.9
Dd - 11.3

Lt. fibula: aged older than 18 months.
(03-5, 209)
GL - 118.5

Lt. astragalus: aged older than 18 months.
(03-5, 209)
GL - 18.1

Rt. astragalus: aged older than 18 months.
(03-5, 209)
GL - 18.0

Lt. calcaneus: aged older than 18 months.
(03-5, 209)
GL - 32.1
GB - 13.8

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris (burial)

Rt. calcaneus: aged older than 18 months.
(03-5, 209)

GL	-	32.1 mm.
GB	-	13.8

Lt. metatarsals: aged older than 18 months.
(03-5, 209)

		V	IV	III	II
GL	-	52.1	54.8	53.8	48.8
GB	-	5.4	5.9	7.1	5.8

Rt. metatarsals: aged older than 18 months.
(03-5, 209)

		V	IV	III	II
GL	-	52.1	54.6	53.8	48.5
GB	-	5.5	6.3	6.5	6.0

Lt. phalanx I, digit II: aged older than 18 months.
(03-5, 209)

GL	-	14.4
Bp	-	5.3
SD	-	3.1
Bd	-	3.7

Lt. phalanx I, digit III: aged older than 18 months.
(03-5, 209)

GL	-	28.1
Bp	-	6.0
SD	-	4.1
Bd	-	5.0

Lt. phalanx I, digit IV: aged older than 18 months.
(03-5, 209)

GL	-	28.8
Bp	-	6.2
SD	-	4.9
Bd	-	5.4

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris

Lt. phalanx I, digit V: aged older than 18 months.
(03-5, 209)
GL - 14.4 mm.
Bp - 5.2
SD - 3.0
Bd - 4.2

Lt. phalanx I, digit I: aged older than 18 months.
(03-5, 209)
GL - 13.4
Bp - 5.4
SD - 4.1
Bd - 5.4

Rt. phalanx I, digit I: aged older than 18 months.
(03-5, 209)
GL - 13.2
Bp - 5.4
SD - 3.5
Bd - 5.4

Rt. phalanx I, digit III: aged older than 18 months.
(03-5, 209)
GL - 28.2
Bp - 6.4
SD - 5.0
Bd - 5.4

Rt. phalanx I, digit IV: aged older than 18 months.
(03-5, 209)
GL - 28.1
Bp - 6.0
SD - 5.0
Bd - 5.0

Rt. phalanx I, digit V: aged older than 18 months.
(03-5, 209)
GL - 14.9
Bp - 5.5
SD - 3.5
Bd - 5.0

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Canis familiaris (burial)

Lt. phalanx II, digit I: aged older than 18 months.
(03-5, 209)
GL - 10.2 mm.
Bp - 5.1
SD - 3.2
Bd - 4.8

Rt. phalanx II, digit III: aged older than 18 months.
(03-5, 209)
GL - 10.0
Bp - 4.8
SD - 3.5
Bd - 4.2

Felis catus (burial)

Rt. distal humerus: aged less than 12 months.
(03-4, 200)
Bd - 15.5

Rt. proximal radius: aged less than 12 months.
(03-4, 200)
Bp - 8.7

Rt. ilium: aged less than 12 months.
(03-2, 204)
SB - 5.4
LA - 14.0

Lt. femur: aged less than 12 months.
(03-4, 206)
SD - 7.5
Bd - 18.2

Rt. femur: aged less than 12 months.
(03-4, 206)
SD - 7.9

Lt. proximal epiphysis of tibia: aged less than 12 months.
(03-4, 206)
Bp - 19.5

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Felis catus (burial)

Rt. distal epiphysis of tibia: aged less than 12 months.
(03-4, 204)
Bd - 15.8 mm.

Lt. calcaneus: aged less than 12 months.
(03-2, 204)
GL - 28.8
GB - 12.6

Lt. astragalus: aged less than 12 months.
(03-2, 204)
GL - 17.2

Rt. astragalus: aged less than 12 months.
(03-2, 204)
GL - 17.3

Caudal vertebra: aged less than 12 months.
(03-4, 206)
BPacd - 4.6
BFcd - 5.1

Caudal vertebra: aged less than 12 months.
(03-4, 206a)
PL - 28.9
BPacr - 2.7
BFcr - 5.0
BFcd - 4.5
HFcd - 4.0
H - 5.1

Caudal vertebra: aged less than 12 months.
(03-5, 209)
PL - 29.8
BPacr - 4.9
BFcr - 7.0
BFcd - 6.0
HFcr - 6.0
HFcd - 5.0
H - 7.3

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Felis catus (burial)

Caudal vertebra: aged less than 12 months.
(03-5, 209)
PL - 29.0 mm.
BPacr - 8.3
BFcr - 6.0
BFcd - 6.0
HFcr - 6.0
HFcd - 5.0
H - 6.2

Caudal vertebra: aged less than 12 months.
(03-5, 209)
PL - 27.3
BPacr - 2.8
BFcr - 4.0
BFcd - 3.5
HFcr - 3.5
HFcd - 3.5
H - 5.2

Sus scrofa

Phalanx II: aged 12-24 months.
(01-25.1, 643)
GL - 24.6
Bp - 18.8
SD - 14.5
Bd - 15.5

Phalanx II: aged 12-24 months.
(01-35.4, 655)
GL - 25.1
Bp - 17.5
SD - 13.0
Bd - 13.5

Proximal ulna: aged less than 3-3.5 years.
(03-5.1, 209)
DPA - 34.4
BPC - 20.8
SDO - 27.8

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Sus scrofa

Proximal ulna: aged 3-3.5 years.
(04-2.1, 801)
DPA - 6.5 mm.
BPC - 21.4

Lower premolar 2: -.
(04-3.1, 802)
5 - 9.7
6 - 13.0
7 - 6.8

Phalanx III: aged 2+ years.
(04-4.1, 803)
DLS - 31.3
Ld - 28.4
MBS - 13.4

Proximal phalanx I: aged less than 2 years.
(04-6.2 a and b, 805)
Bp - 15.9

Distal epiphysis of Mt. III: aged less than 2 years.
(04-6.1, 805)
Bd - 18.4

Phalanx III: aged 12+ months.
(04-8.4, 807)
DLS - 33.0
Ld - 30.9
MBS - 13.3

Phalanx I: aged less than 12 months.
(04-8.2, 807)
SD - 8.8
Bd - 9.9

Astragalus: aged to an adult age range.
(04-8.1, 807)
GL1 - 50.7
GLm - 47.4
D1 - 24.2
Dm - 27.8
Bp - 30.9

Table 1, Measurements.
(continued)
Measurements

MAMMALIA

Bos sp.

Rt. femur: aged 6+ months.
(03-1.3 a and b, 200)
GLC - 180.0 mm.
GL - 135.0
SD - 22.5

Lt. femur: aged 6+ months.
(03-1.4, 200)
SD - 22.0

Rt. distal epiphysis of femur: aged 6+ months.
(03-1.5, 200)
Bd - 53.7

Lt. ischium: aged 6+ months.
(03-1.6, 200)
LS - 32.0

Ovis/Capra

Lt. shaft of radius: aged 3.5-4 years.
(01-28.1, 647)
SD - 15.4

Thoracic vertebra: aged to an adult age range.
(01-Trench Cleaning.3)
PL - 28.3

Distal tibia: aged 15-20 months.
(03-1.1, 200)
Bd - 29.4

Phalanx II: aged 6-9 months.
(03-5.5, 209)
SD - 8.1
Bd - 8.9

Distal tibia: aged 24+ months.
(03-9.1, backhoe test 4)
Bd - 28.7
SD - 15.5

Table 1, Measurements.
(concluded)
Measurements

MAMMALIA

Ovis/Capra

Trochlear notch region of ulna: aged 3+ years.
(04-2.2, 801)
BPC - 28.6 mm.

Proximal radius: aged older than 10 months.
(04-2.3, 801)
Bp - 31.3

Homo sapiens sapiens

Phalanx I: -.
(03-2, 204)
Bp - 13.8
SD - 7.9

Table 2, Identified Remains.

Species (Number of Identified Specimens)	NISP
Class Pisces - Fish	
Unidentified	4
Class Aves - Birds	
Order Galliformes - Gallinaceous Birds	2
Family Meleagrididae	
Meleagris gallopavo - Domestic Turkey	5
Family Tetraonidae	
Gallus gallus - Domestic Chicken	29
Class Mammalia - Mammals	
Order Carnivora	
Family Canidae	
Canis familiaris - Domestic Dog	1
Family Felidae	
Felis catus - Domestic Cat	1
Order Artiodactyla	
Family Tayassuidae	
Sus scrofa - Domestic Pig	18
Family Bovidae	
Bos sp. - Domestic Cattle	8
Ovis/Capra - Domestic Sheep/Goat #	23
Order Primates	
Family Hominidae	
Homo sapiens sapiens - Human	1
NISP Total	92

Table 2, Identified Remains.
(concluded)

Fragmentary Bone Assignable to Class:	
Aves	
(Small size - *Fringilidae* size)	2
(Large size - *Gallus* to *Meleagris* size)	29
Mammalia	
(Medium size - *Ovis* to *Sus* size)	644
(Large size - *Bos* to *Equus* size)	67
Fragment Total	742
NISP Total	92
Assemblage Total	834

The distinguishing characters of *Ovis* and *Capra* are so slight, that a large osteological sample of *Ovis* and *Capra* are needed to distinguish the species apart. Since no such reference collection was available at this time, no distinction was made between the two animals.

Table 3, Fragmentary Bone Assignable to Class.

Class	TNF (Total Number of Fragments)
Aves	
Small avian size (Fringilidae size)	
Sterum	1
Long Bone	1
	2
Medium avian size (Gallus to Meleagris size)	
Clavicula	2
Furcula	1
Sterum	2
Scapula	1
Rib	4
Long Bone	17
Unidentified fragments	2
	29
Mammalia	
Medium mammal size (Ovis to Sus size)	
Cranial	4
Scapula	18
Vertebrae	37
Rib	136
Flat bone	42
Costal cartilage	1
Long bone	205
Unidentified fragments	201
	644
Large mammal size (Bos to Equus size)	
Vertebrae	7
Rib	23
Flat bone	11
Long bone	17
Unidentified fragments	9
	67
TNF Total	742

Table 4, Distribution Of Species By Stratum Unit.
Trench 01

Species	Unit Strata T.C. CT.	%	23 CT.	%	25 CT.	%
Pisces	0	0	0	0	0	0
Galliformes	0	0	0	0	0	0
Meleagris	0	0	0	0	0	0
Gallus	1	14.2	1	100.0	0	0
Sus	0	0	0	0	1	100.0
Bos	1	14.2	0	0	0	0
Ovis/Capra	5	71.4	0	0	0	0

Trench 01

Species	Unit Strata 28 CT.	%	30 CT.	%	31 CT.	%
Pisces	0	0	0	0	1	9.0
Galliformes	0	0	0	0	0	0
Meleagris	0	0	1	100.0	1	9.0
Gallus	0	0	0	0	7	64.0
Sus	0	0	0	0	0	0
Bos	0	0	0	0	0	0
Ovis/Capra	3	100.0	0	0	2	18.0

Trench 01

Species	Unit Strata 34 CT.	%	35 CT.	%
Pisces	0	0	0	0
Galliformes	0	0	1	3.8
Meleagris	0	0	3	11.5
Gallus	2	100.0	12	46.1
Sus	0	0	5	19.3
Bos	0	0	0	0
Ovis/Capra	0	0	5	19.3

T.C. = Trench Cleaning

Table 4, Distribution Of Species By Stratum Unit.
(continued)
Trench 02

Species	Unit Strata 11 CT.	11 %	16 CT.	16 %
Bos	0	0	1	100.0
Ovis/Capra	1	100.0	0	0

Table 4, Distribution Of Species By Stratum Unit. (continued)
Trench 03

Species	Unit Strata 1		2		4	
	CT.	%	CT.	%	CT.	%
Pisces	0	0	0	0	0	0
Galliformes	0	0	0	0	1	33.3
Gallus	0	0	1	50.0	2	66.7
Sus	0	0	0	0	0	0
Bos	5	71.4	0	0	0	0
Ovis/Capra	2	28.6	0	0	0	0
Homo	0	0	1	50.0	0	0
Felis#			P		P	

Trench 03

Species	Unit Strata 5		9	
	CT.	%	CT.	%
Pisces	1	16.7	0	0
Galliformes	0	0	0	0
Gallus	0	0	0	0
Sus	2	33.3	0	0
Bos	1	16.7	0	0
Ovis/Capra	2	33.3	1	100.0
Homo	0	0	0	0
Canis#	P			
Felis#	P			

Canis and Felis are represented by burials occuring in strata indicated by P (presence).

Table 4, Distribution Of Species By Stratum Unit.
(concluded)
Trench 04

Species	Unit Strata 2		3		4	
	CT.	%	CT.	%	CT.	%
Pisces	0	0	0	0	0	0
Gallus	1	25.0	0	0	0	0
Sus	1	25.0	1	100.0	1	100.0
Ovis/Capra	2	50.0	0	0	0	0

Trench 04

Species	Unit Strata 6		8	
	CT.	%	CT.	%
Pisces	0	0	1	12.5
Gallus	0	0	2	25.0
Sus	2	100.0	5	62.5
Ovis/Capra	0	0	0	0

Table 5, Age Profiles.

Species	CT.	%
Gallus gallus		
(n=29)		
Juvenile age range	1	3.44
Adult age range	14	48.27
Unassigned	14	48.27
	29	99.98
Sus scrofa		
(n=18)		
less than 12 months	2	11.11
12-24 months	6	33.33
24-30 months	2	11.11
36-42 months	2	11.11
Adult age range	5	28.00
Unassigned	1	5.50
	18	99.00
Sus Mortality Pattern		
0-12 months	2	16.6
12-24 months	6	50.0
24-30 months	2	16.6
36-42 months	2	16.6
	12	99.8
Bos sp.		
(n=8)		
6 months	5	62.5
24-30 months	1	12.5
Adult age range	2	25.0
	8	100.0
Bos Mortality Pattern		
6-12 months	5	83.3
24-30 months	1	16.6
	6	99.0

Table 5, Age Profiles.

Species	CT.	%
Ovis/Capra (n=23)		
6-10 months	3	13.0
15-24 months	2	9.0
36-42 months	3	13.0
42-48 months	1	4.0
Adult age range	5	21.0
Unassigned	9	39.0
	23	99.0
Ovis/Capra Mortality Pattern		
6-10 months	3	33.0
15-24 months	2	22.0
36-42 months	3	33.0
42-48 months	1	11.0
	9	99.0

Table 6, Catalog Of Identified Faunal Remains.

Species	Element	Provenience
Pisces - Fish		
	Thoracic vertebra.	01-28.4, 647
	Dentary.	01-31.11, 653
	Vertebra.	03-5.9, 209
	Cauda vertebra.	04-8.5, 807
Galliformes - Gallinaceous Birds		
	Furcula fragment.	01-35.27, 655
	Distal shaft of femur.	03-4.1, 206a
Meleagris gallopavo - Domestic Turkey		
	Cervical vertebra.	01-30.1, 650
	Shaft of radius.#	01-31.1, 653
	Lt. thoracic phalanx I.#	01-35.24, 655
	Proximal radius.	01-35.25, 655
	Distal radius.#	01-35.26, 655
Gallus gallus - Domestic Chicken		
	Radius.#	01-T.C..1
	Shaft of tibiotarsus.#	01-31.2, 653
	Rt. proximal ulna.	01-31.3, 653
	Lt. proximal humerus.	01-31.4, 653
	Rt. carpometacarpus.#	01-31.5, 653
	Distal radius.#	01-31.8, 653
	Rt. coracoid.#	01-31.9, 653
	Rt. proximal coracoid.	01-31.10, 653
	Distal scapula.	01-34.1, 652
	Distal humerus.#	01-34.2, 652
	Lt. carpometacarpus.#	01-35.11, 655
	Rt. scapula.#	01-35.12, 655
	Rt. scapula.#	01-35.13, 655
	Lt. scapula.	01-35.14, 655
	Rt. scapula.	01-35.15, 655
	Rt. radius.#	01-35.16, 655
	Rt. proximal radius.	01-35.17, 655
	Rt. proximal radius.	01-35.18, 655
	Lt. distal radius.#	01-35.19, 655
	Lt. distal femur.	01-35.20, 655
	Lt. coracoid.#	01-35.21, 655
	Lt. distal coracoid.	01-35.22, 655
	Rt. distal coracoid.#	01-35.23, 655
	Pelvic phalanx I.#	03-2.1, 204
	Distal humerus.#	03-4.1, 206
	Pelvic phalanx I.#	03-4.2, 206
	Pelvic phalanx I.#	04-2.4, 801

Table 6, Catalog Of Identified Faunal Remains. (continued)

Species	Element	Provenience
Gallus gallus - Domestic Chicken		
	Distal ulna.#	04-8.6, 807
	Thoracic vertebra.	04-8.7, 807
Canis familiaris - Domestic Dog		
	3rd lumbar vertebra.	03-5, 209
	4th lumbar vertebra.#	03-5, 209
	5th lumbar vertebra.#	03-5, 209
	6th lumbar vertebra.#	03-5, 209
	7th lumbar vertebra.#	03-5, 209
	Fragmentary sacral vertebrae.	03-5, 209
	8 Caudal vertebrae.#	03-5, 209
	Rt. and Lt. ilia.#	03-5, 209
	Rt. and Lt. ischia.	03-5, 209
	Rt. and Lt. femora.#	03-5, 209
	Rt. and Lt. patella.#	03-5, 209
	Rt. and Lt. tibiae.#	03-5, 209
	Rt. and Lt. fibulae.#	03-5, 209
	Rt. and Lt. calcanea.#	03-5, 209
	Rt. and Lt. astragali.#	03-5, 209
	5 tarsals.	03-5, 209
	8 Rt. and Lt. metatarsals.#	03-5, 209
	14 phalanges.#	03-5, 209
Felis catus - Domestic Cat		
	Lt. upper canine.	03-2, 204
	Rt. lower canine.	03-2, 204
	Rt. corpus of mandible.	03-2, 204
	Rt. and Lt. tympanic bulla and petrous portion.	03-2, 204
	Lumbar vertebra fragment.	03-2, 204
	Rt. ilium.#	03-2, 204
	Rt. shaft of tibia.	03-2, 204
	Rt. distal epiphysis of tibia.#	03-2, 204
	Rt. and Lt. calcanea.#	03-2, 204
	Rt. and Lt. astragali.#	03-2, 204

Table 6, Catalog Of Identified Remains.
(continued)

Species	Element	Provenience
Felis catus - Domestic Cat		
	8 Rt. and Lt. metatarsals.	03-2, 204
	4 long bone fragments.	03-2, 204
	Rt. and Lt. shaft of humeri.	03-4, 200
	Rt. and Lt. distal humeri.#	03-4, 200
	Rt. and Lt. proximal ulnae.	03-4, 200
	Rt. head of radius.#	03-4, 200
	8 long bone fragments.	03-4, 200
	2 flat bone fragments.	03-4, 200
	Rt. and Lt. shaft of femora.#	03-4, 206
	Rt. and Lt. distal epiphysis of femora.#	03-4, 206
	Lt. proximal epiphysis of tibia.#	03-4, 206
	Caudal vertebra.#	03-4, 206
	Lt. lower canine.	03-4, 206a
	Lt. proximal tibia.	03-4, 206a
	Lumbar vertebra fragment.	03-4, 206a
	Caudal vertebra	03-4, 206a
	1 long bone fragment.	03-4, 206a
	3 caudal vertebrae.#	03-4, 209
Sus scrofa - Domestic Pig		
	Phalanx II.#	01-25.1, 643
	Dorsal section of rib.	01-35.1, 655
	Dorsal section of rib.	01-35.2, 655
	Head of rib.	01-35.3, 655
	Phalanx II.#	01-35.4, 655
	Proximal calcaneus.	01-35.5, 655
	Proximal ulna.#	03-5.1, 209
	Bulla fragment.	03-5.4, 209
	Proximal ulna.#	04-2.1, 801
	Lower premolar 2.#	04-3.1, 802
	Phalanx III.#	04-4.1, 803
	Distal epiphysis of Mt. III.#	04-6.1, 805
	Proximal phalanx I.#	04-6.2, 805

Table 6, Catalog Of Identified Remains.
(continued)

Species	Element	Provenience
Sus scrofa - Domestic Pig		
	Astragalus.#	04-8.1, 807
	Phalanx I.#	04-8.2, 807
	Phalanx III.#	04-8.4, 807
	Maxillary and mandible fragments.	04-8.5, 807
	Carpal/tarsal.	04-8.8, 807
Bos sp. - Domestic Cattle		
	Radius.	01-T.C..1, 649
	Glenoid cavity of scapula.	02-16.1, 33
	Rt. femur.#	03-1.3, 200
	Lt. femur.#	03-1.4, 200
	Rt. distal epiphysis of femur.#	03-1.5, 200
	Lt. ischium.#	03-1.6, 200
	Distal ilium.	03-1.7, 200
	Distal tibia.	03-5.2, 209
Ovis/Capra - Domestic Sheep/Goat		
	Dorsal rib.	01-T.C..1, 649
	Lt. distal humerus.	01-T.C..2, 649
	Thoracic vertebra.	01-T.C..3, 649
	Dorsal rib.	01-T.C..2
	Thoracic vertebra.#	01-T.C..3
	Lt. radius.#	01-28.1, 647
	Rt. iluim.	01-28.2, 647
	Dorsal rib.	01-28.3, 647
	Lumbar vertebra.	01-31.6, 653
	Dorsal rib.	01-31.7, 653
	Lumbar vertebra.	01-35.6, 655
	Distal humerus.	01-35.7, 655
	Distal femur.	01-35.8, 655
	Distal humerus.	01-35.9, 655
	Distal humerus.	01-35.10, 655
	Distal femur.	02-11.1, 23
	Distal tibia.#	03-1.1, 200
	Shaft of femur.	03-1.2, 200
	Proximal epiphysis of humerus.	03-5.3, 209
	Phalanx II.#	03-5.5, 209
	Distal tibia.#	03-9.1, b.t. 4
	Proximal ulna.#	04-2.2, 801
	Proximal radius.#	04-2.3, 801

Table 6, Catalog Of Identified Remains,
(concluded)

Species	Element	Provenience
Homo sapiens sapiens	Proximal phalanx.#	03-2, 204

T.C. = Trench Cleaning
b.t. = backhoe test
# = measurement taken, see table 1

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