IV. SUMMARY OF FIELDWORK

The excavation of the McKean/Cochran Farm began in early December 1995. The excavation plan called for three stages of work. The first stage was the hand excavation of a sample of the plowzone, the top foot or so of soil that had been disturbed by plowing. In the second stage, the remainder of the plowzone on the site was removed using a backhoe with a smooth bucket. The soil was carried off the site by a dump truck. Finally, the cellars, wells, and other cultural features uncovered were dug by hand. The plan for feature excavation was refined at field meetings attended by representatives of DelDOT and the Delaware SHPO after the plowzone stripping and initial sampling of the features.

A. PLOWZONE SAMPLING

The first stage of the fieldwork was the excavation of a sample of plowzone across the core of the farm site. We had several reasons for wanting to sample the artifacts from this disturbed soil. Objects that have been intentionally dumped sometimes end up in deep pits that survive plowing, but any objects that were simply lost on the ground would have been plowed up and incorporated into the plowzone. Objects that have been accidentally lost are often different from those that have been thrown away; for example, although one hardly ever finds coins in trash dumps, they are regularly lost. Therefore, only by excavating part of the plowzone can one get a truly representative sample of the material things used on a site that has been plowed. Excavation of the plowzone can also sometimes tell us what was being done on various parts of the farm, by showing what was dropped there. The site measured about 35,000 square feet, or 2,800 square meters. Within this area 151 1x1-meter units were excavated, comprising 1,625 square feet, about 5.4 percent of the site (Figure 7). A total of 20,404 artifacts were recovered during the Phase II and III plowzone sampling—7,528 artifacts excluding the 12,876 brick fragments which were counted and then thrown back.

B. PLOWZONE STRIPPING

When we started work in December 1995, the weather was not bad, and we made quick progress on the first stage. Square excavation units were placed across the hill, gradually extending the grid pattern and gradually exposing more of the site. During the unit excavations we found more features, including a second cellar hole and several postholes. The next stage of work was the removal of the rest of the plowzone from the site using a backhoe with a smooth bucket, and we were looking forward to this stripping, sure that many more features would be exposed. The backhoe and dump truck arrived on the site on December 11. We got in one good day of work, but that night it rained, and the already slippery ground turned to mud. When we tried to resume work the next day, the dump truck could not move, and the backhoe was leaving such deep tire ruts that we feared it would damage the features below the plowzone. Fortunately, DelDOT had revised their construction schedule, and we were able to put off the work until the following spring.

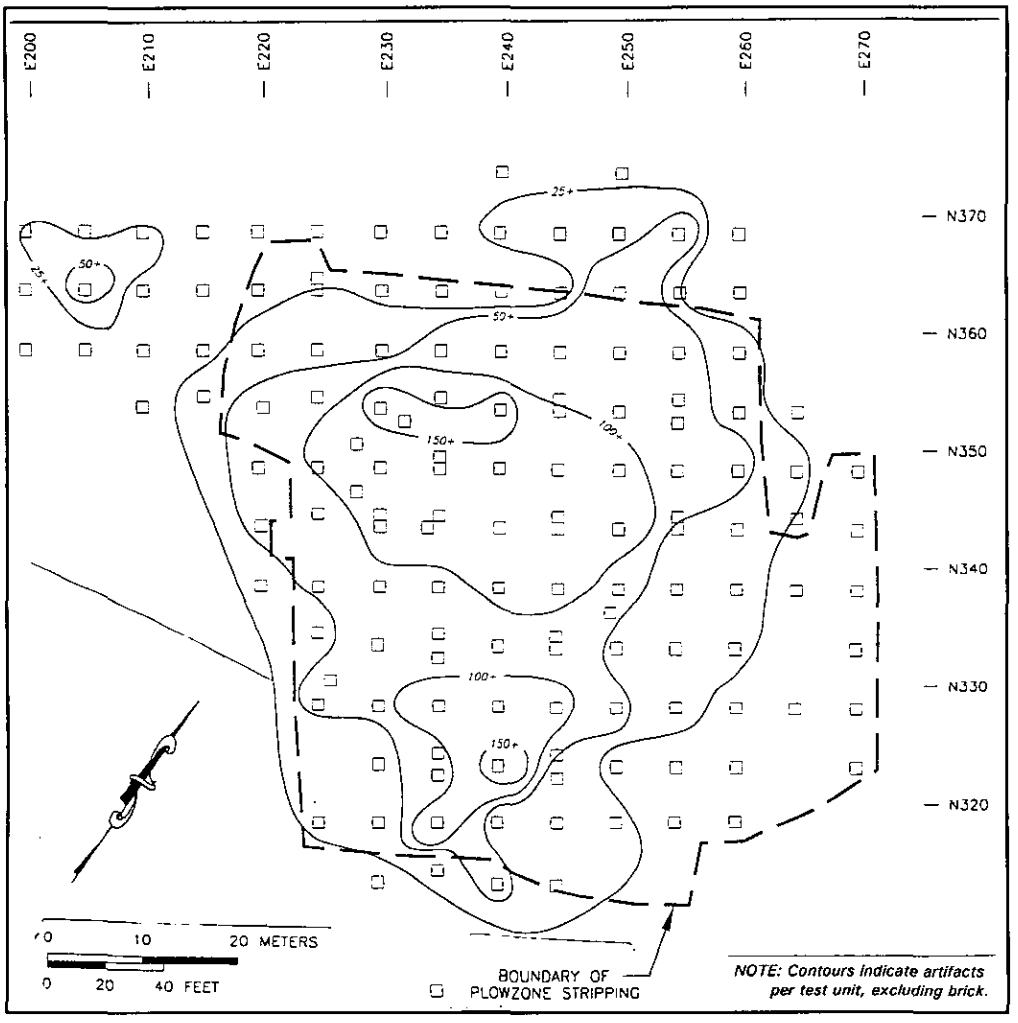

FIGURE 7: Plan of Plowzone Sampling

When we returned to the site on May 8, 1996, we found it essentially unharmed by the winter, and scheduled a backhoe and dump truck for the next day. Our hopes were high. We knew that interesting things would be found as soon as we could uncover large areas of the site. But that night it rained torrents, forcing yet another delay, and we could not begin machine work until May 14. These first rains were our introduction to the summer, one of the wettest on record in Delaware. When the backhoe work started, in the southwest corner of the site, we began to make discoveries immediately. First we uncovered Feature 4, which appeared as a large rectangle of multicolored clay; we now know that this was the cellar hole of the first house on the site. Feature 29, a well, appeared as a round pit with bones and large potsherds visible on the surface. Not far away we found the stone wall of Feature 15, the dairy, and a circular area of brown soil that turned out to be another well, Feature 27. On the first day we had uncovered two buildings and two wells, and we could tell from looking at these features that they would be full of artifacts. The area we eventually stripped covered approximately 22,600 square feet or 2,100 square meters, and within this area we exposed more than 100 features. To prevent the bare soil from eroding into the river, we surrounded the site with silt fencing, and to protect the features, we covered them with large sheets of black

PLATE 8: Mapping the Site

plastic. A grid of points at 5-meter intervals was then laid out across the site using a surveyor's transit, and these points were used to prepare a detailed map of all the features (Plate 8).

C. FEATURE EXCAVATION

After the plowzone had been removed, more than 100 features were identified on the site, most of them small fence postholes or small unidentified pits. Six large features were present, two wells and four cellar holes, all of which were extensively excavated (Figure 8). Feature excavation went on through May and June and into July, the weather growing ever hotter despite the frequent, heavy rains. By the end of the project we had worked on the site in all seasons, and we learned that its exposed, commanding location had some distinct disadvantages. The view was wonderful, but the hilltop was swept by harsh winds in the winter and baked by the summer sun.

The features seemed to be grouped within two distinct time periods. Two cellar holes, Features 2 and 4, and one well, Feature 29, seemed to date to the earlier stage, in the eighteenth century. A third cellar hole, Feature 1; a second well, Feature 27; and a dairy building, Feature 15, seemed to date to the later stage, approximately 1800 to 1830. The date of two barns, Structures A and B, was

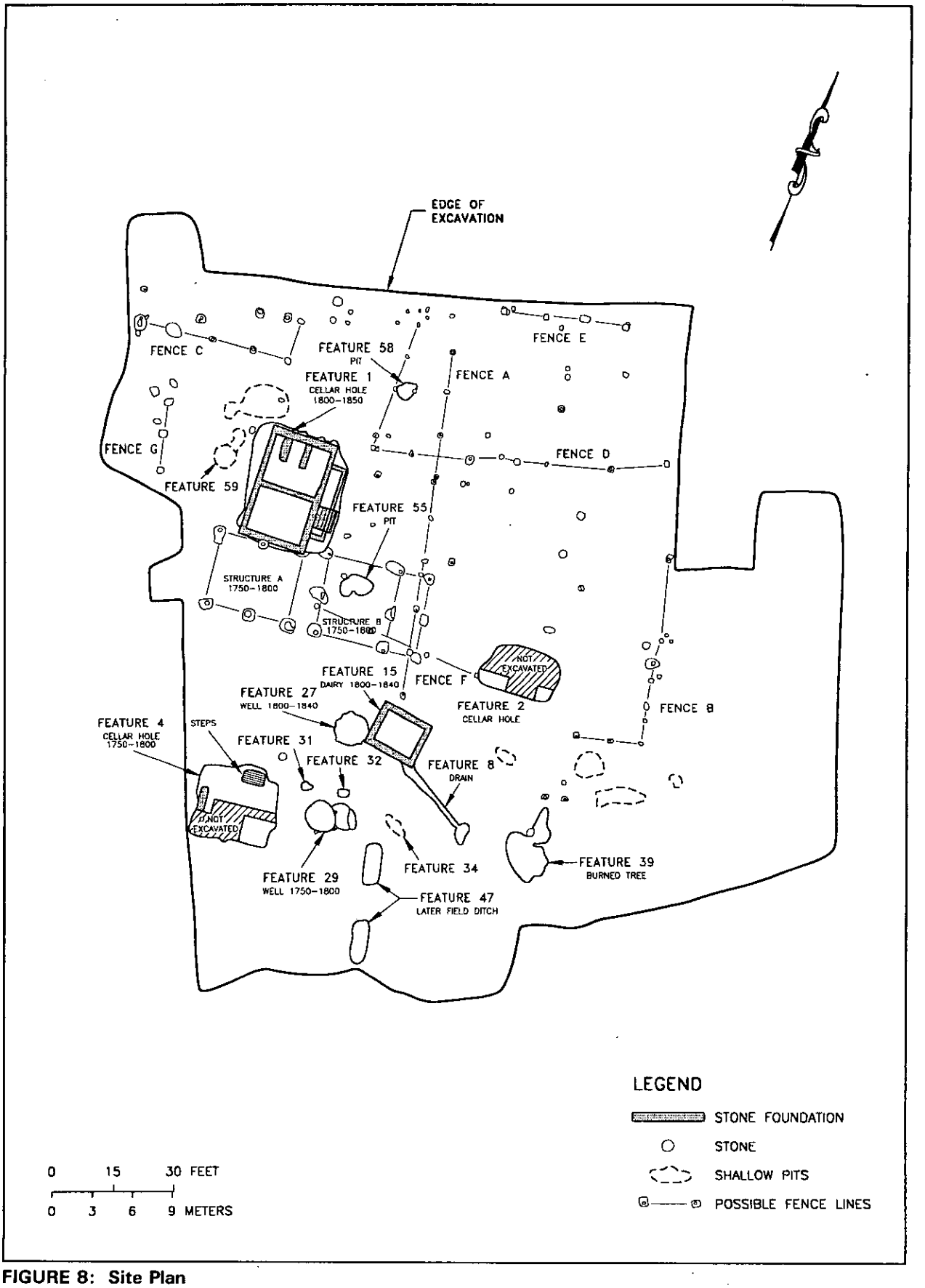

FIGURE 8: Site Plan

not clear at first, but it now appears that both were part of the earlier stage. The dairy, Feature 15, seems to have remained in use after the houses on the site had been abandoned. If so, the site may have continued to serve as a farm work area after the Cochran family had moved their residence to another house a few hundred yards away.

Feature excavation began with testing of the larger features to determine their nature and decide whether complete or partial excavation would be required. For the four large cellar holes on the site, testing was carried out by the placement of units, usually measuring 2x2 meters, in one corner of the feature. Smaller features were tested by the excavation of a quadrant or a half. Features were excavated by strata, and all excavated soil was screened through ¼-inch mesh to recover artifacts. Two-liter soil samples for flotation were taken from each stratum that appeared likely to contain organic remains. After testing, discussions were held with representatives of DelDOT and the Delaware SHPO to agree on an excavation plan. Some features, including Feature 1, the large cellar hole, were completely excavated, while in other features no further work was done. In all, more than 22,000 artifacts and 9,000 faunal specimens (bones) were recovered during the feature excavation. Careful drawings and plans were made of all features (see Plate 6) and all were photographed before, during, and after excavation.

1. Feature 2, Small Cellar

Feature 2 was a small cellar hole, measuring 18 by 12 feet (5.5 by 3.7 meters), in the approximate center of the site. Two units were excavated in this cellar (Figure 9). Unit 1, which measured 1x2 meters, was placed in the southwest corner of the feature, over what appeared to be a bulkhead entrance. Unit 2, which measured 1x1 meter, was placed in the southeast corner of the feature. The main fill in Feature 2 consisted of mixed clay, loam, and sand closely resembling the surrounding subsoil. This soil was clearly "redeposited," which means that it had been dug up and then dumped into the hole, rather than washing in naturally. On the floor of the feature in Unit 2 was a thin layer of sand that did appear to have been washed in, possibly during a single rainstorm. Beneath the main fill in Unit 1 was a second stratum that also appeared to have been excavated and redeposited, but which was different from the main fill in that it contained more loam. This stratum contained more artifacts, including 41 sherds of delftware and more than 20 bone fragments. An intact hoe blade was found in the floor of the cellar, stuck into the subsoil. The feature had the appearance of a large posthole, that is, it appeared that immediately after it was excavated the soil that had been dug out was put back in.

The south and east sides of the cellar were nearly vertical, like cellar walls. The floor of the cellar was about 4 feet below the bottom of the plowzone in Unit 2 and the deepest part of Unit 1, which is about the right depth for a cellar. Unit 1 was placed over what appeared to be a bulkhead entrance on the west side, and this side of the cellar was sloping, rather than straight like the other sides (see Figure 9). However, there was no clear sign of steps. In the southwest corner of the cellar, in Unit 1, a small rectangular hole measuring about 12x10 inches had been dug 6 inches into the floor. The fill inside the hole was the same as in the feature above. This hole could have been dug to hold an

interior post, but there was no evidence that such a post had ever been installed. Nor was any other evidence of foundations found in the cellar.

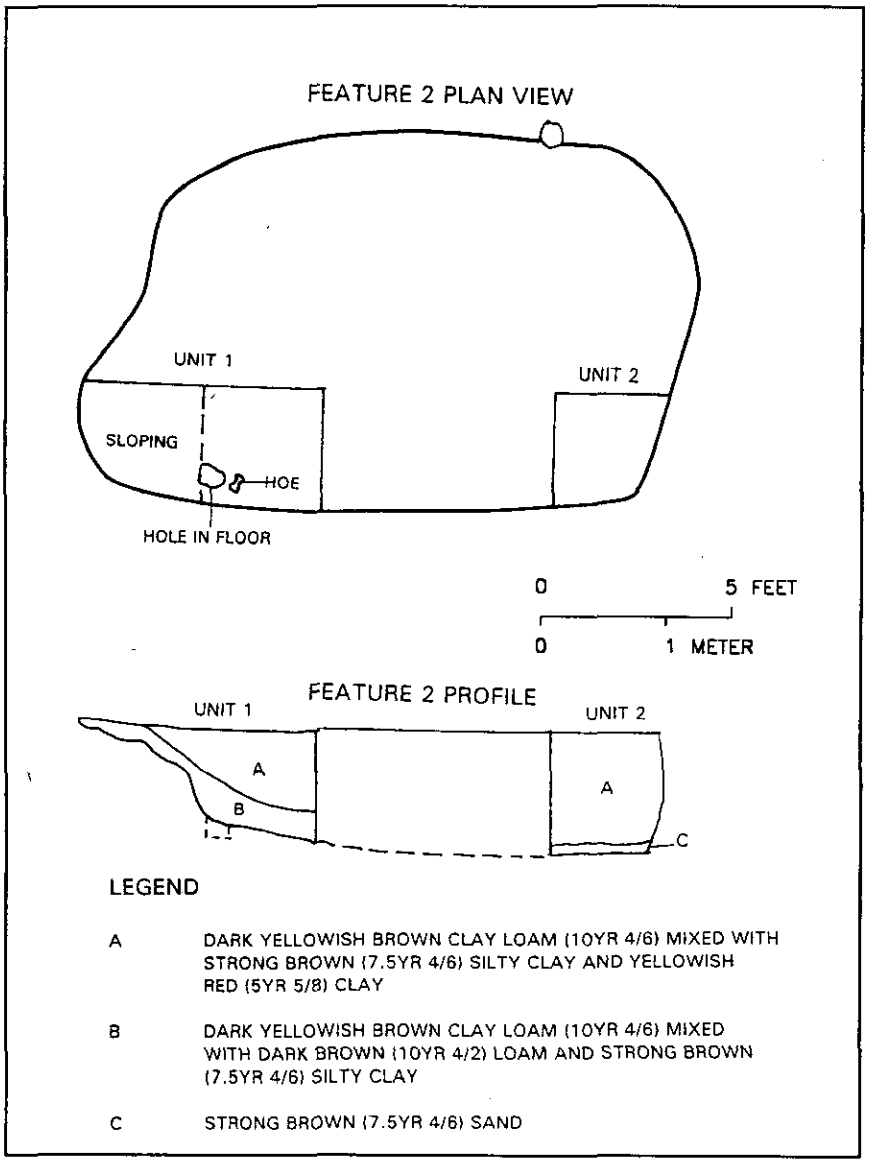

FIGURE 9: Plan and Profile of Feature 2, a Small Cellar

The simplest interpretation of this peculiar feature is that it was abandoned without ever having been finished. Either because of some catastrophic event, such as the death of the builder, or because the builders simply changed their minds, they gave up on the cellar before they had finished digging it. It stood open long enough for a storm to wash in some sand, and then the builders shoveled the dirt back. The only indication that it may ever have been completed was a fence line running off the southwest corner of the cellar (Fence F), but that is hardly conclusive evidence.

Whatever the history of the cellar, the artifacts recovered suggest that it was used early in the history of the site. The only ceramics found were delftware, an eighteenth-century type, and the hoe blade was what Egloff (1980) calls "Type 2," which also dates to the eighteenth century. If the hole had been dug later in the history of the site—say, after 1800—some sherds of creamware or pearlware would surely have been lying around on the ground, and they would have become mixed into the feature fill.

2. Feature 4, Cellar, 1750 to 1800

Feature 4 was a cellar 3 feet deep, 19 feet long, and 17 feet wide (5.8 by 5.2 meters), probably the basement of the earliest house on the site (Figure 10). One short section of stone wall foundation

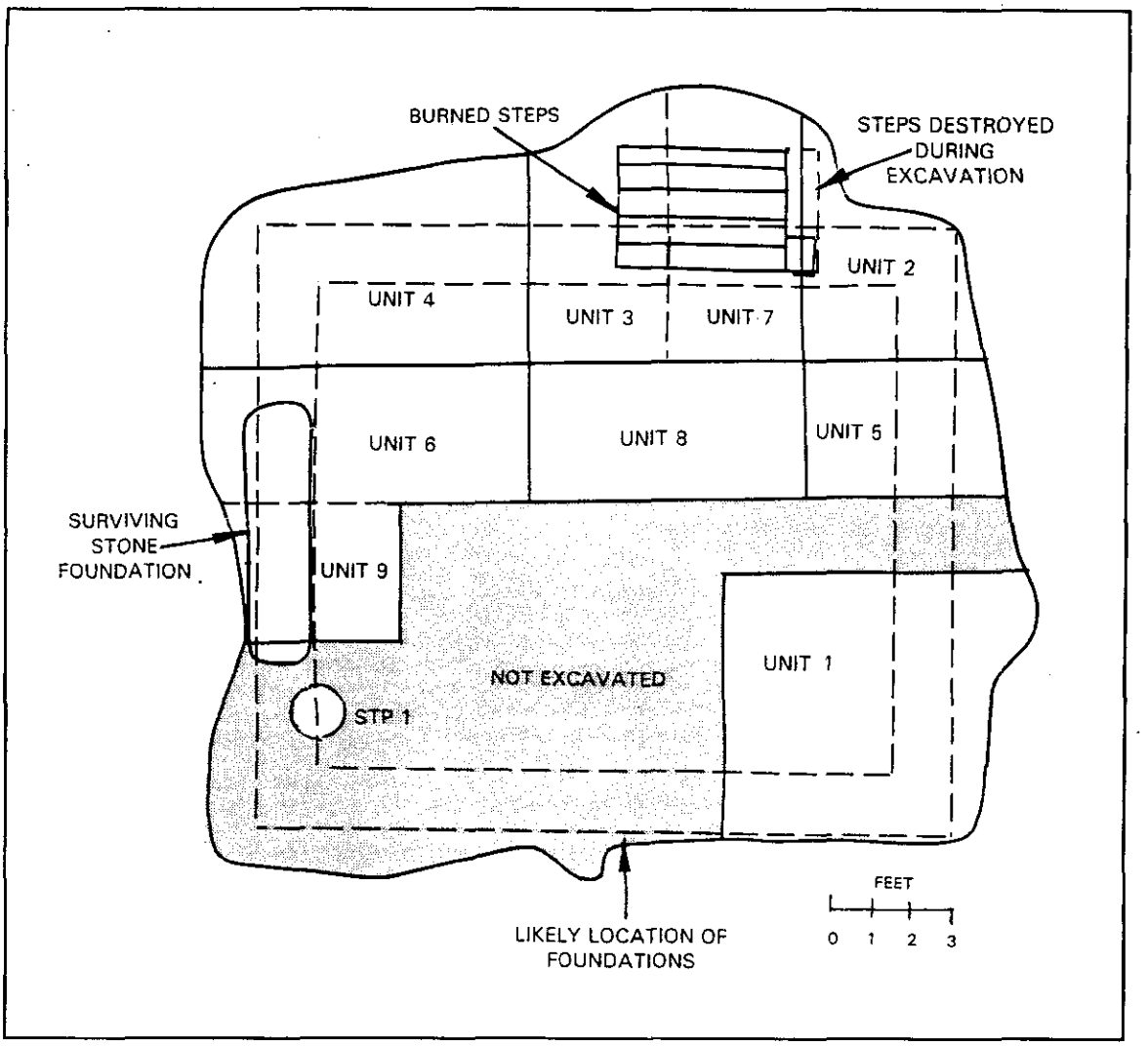

FIGURE 10: Plan of Feature 4, Cellar of the Earlier House, 1750-1800

survived in the cellar. This section, along the west side of the cellar, was 6 feet long and 18 inches thick. It was constructed of large stone cobbles bonded with sand mortar. The remainder of the foundation must have been completely "robbed," that is, salvaged, to be used in the construction of either the later house represented by Feature 1 or the dairy, Feature 15. The most interesting architectural feature in the cellar was the bulkhead entrance, located in the north wall, slightly east of center (Figure 11; Plate 9). (A bulkhead entrance gives access to the cellar from outside the house; it typically has doors lying horizontal on the ground.) The bulkhead steps were wooden, and they appear to have burned in place, leaving dense black ash deposits marking the locations of all the boards. Five steps were preserved, rising to a height of 2 feet above the cellar floor. If, as seems likely, this house once had a complete basement, the upper 2 to 3 feet of the steps had disappeared. The steps were about 5 feet wide. The presence of the boards was not recognized when they were first encountered, so the easternmost foot of the steps was destroyed during excavation. The remainder was sufficiently sturdy to be completely exposed and photographed. The upper steps rested on subsoil, into which the form of the steps had been cut. The lowest step rested on a row of

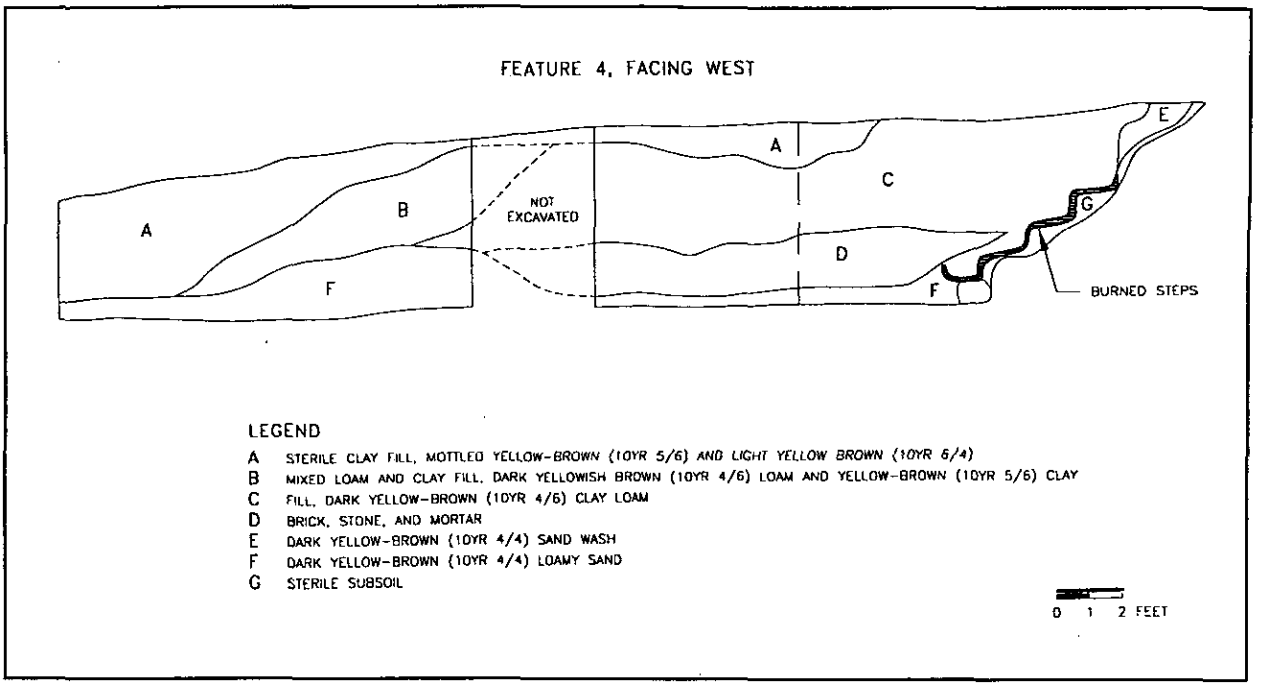

FIGURE 11: Profile of Feature 4, Cellar of the Earlier House, 1750-1800

small stones. Based on the position of the steps and the surviving wall, the house foundations probably measured 18 by 15 feet.

The first house was situated at the southwestern corner of the site, where the slope was steepest, just east of the ravine that formed the western boundary of the site. This ravine, more than 4 feet deep, serves as a reminder of how much damage had been done to the site by erosion. Thick deposits of washed-down soil in the field below the ravine, more than 50 yards from the site, yielded substantial numbers of artifacts, but hardly any artifacts were recovered from shovel tests dug in the ravine itself. The ravine was probably not there at all while the site was occupied, and if it was present, it must have been much smaller. It may even have begun as a road leading from the site down to the river a hundred yards away. Because of careless farming—the old plow scars on the site run straight up and down the slope—rain washed this part of the site away, leaving a great gully where part of the farmyard had once been. The artifacts that had lain on the surface next to the house were carried down into the lower field.

The extent of damage by plowing and erosion in this part of the site was also apparent in the profile of the cellar. After removal of the plowzone, which was less than a foot deep in this area, the cellar was only 3 feet deep at the northern, upslope end and 2 feet deep at the southern end. The floor was nearly flat. If the cellar was originally 4 feet deep, a typical depth for an English basement (leaving 2 to 3 feet of the cellar above ground), then nearly 40 percent of the cellar fill had been destroyed, which is important to keep in mind in the discussion of what remained.

PLATE 9: Feature 4, the Early Cellar, 1750-1800, Overall View Showing Storm Damage

Nine units were excavated in the early cellar, comprising about 70 percent of its total area. Because the southern half of the cellar contained no foundations and was largely filled with nearly sterile mixed soils, it was only partially excavated. (After the discovery of the surviving wall, the unexcavated portion of the feature was extensively probed with a pointed steel bar.) Excavation Unit 1, which measured 2x2 meters, was placed in the southeast corner of the feature; this unit yielded so few artifacts that a third of the soil was discarded without screening. The crew, worn out from digging the hard, nearly sterile clay, was ready to give up on the feature after that first unit, but one should never judge a cellar hole on the finds from only one corner. ExcavationUnit 2, which measured 1x1.4 meters, was therefore placed in the northeast corner to investigate a protrusion on the north wall that turned out to be the bulkhead entrance. Unit 2 contained many more artifacts than Unit 1, and Unit 3, on the other side of the bulkhead, produced even more. Because of the interesting remains of the bulkhead steps, and because Unit 2 contained so many more artifacts than Unit 1, further work was focused on the north end of the feature. The number of artifacts recovered declined as one moved away from the stairs. Plate 10 shows the cellar after the completion of the excavation. We spent hours cleaning the feature and straightening the walls of the excavation for this photograph, but when we were just about finished the sky opened up and we and the cellar were drenched by a brief but torrential rain, leaving puddles everywhere and undoing much of our work. It rained for the next two days, and these heavy rains caused large sections of the feature wall to cave in, so this was the best photograph we ever got.

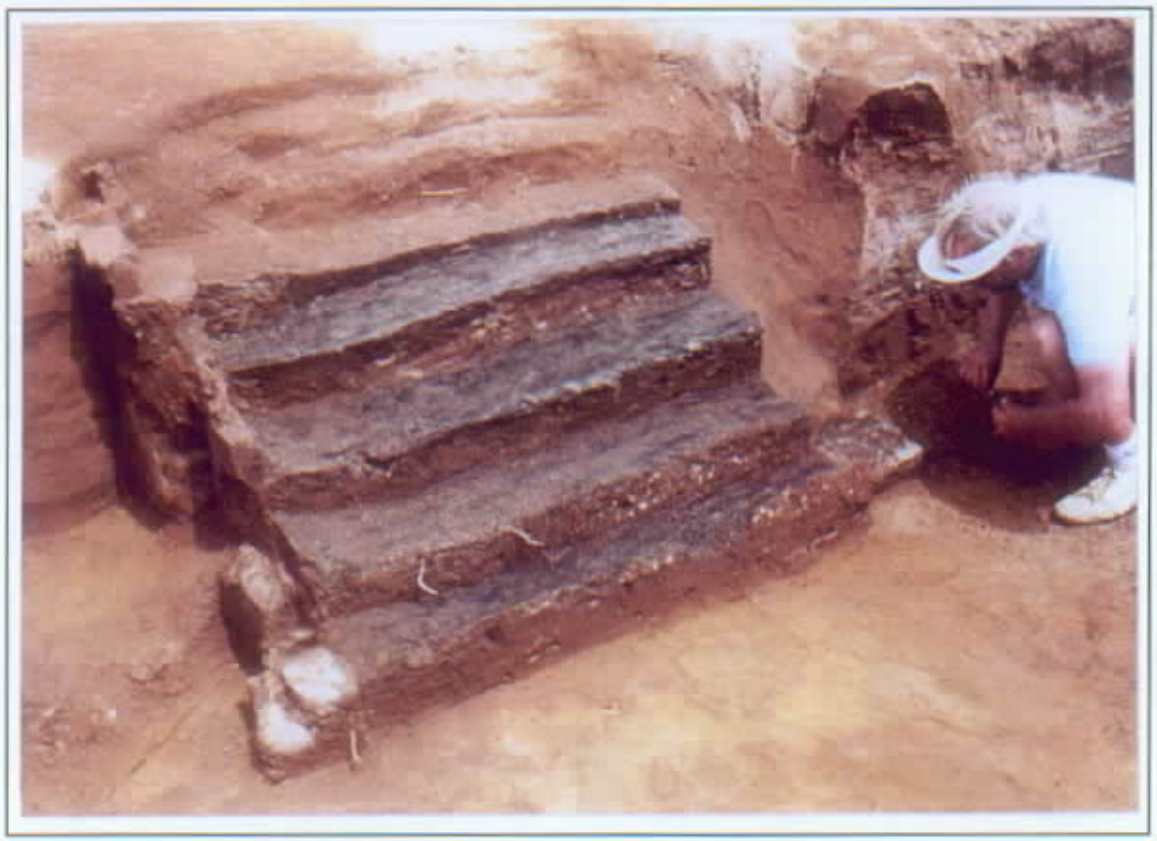

PLATE 10: Burned Steps in Feature 4, the Early Cellar, 1750-1800

PLATE 11: Profile of Feature 29, the Early Well, Filled Around 1800

Natural deposits of soil washed in by the rain, recognizable by their similarity to those that formed in our excavations after each storm, were found only in the very bottom of the cellar, showing that it had been intentionally filled in. Five main strata or layers of fill were present. The uppermost stratum, and therefore the last deposited, was present only in the southern two-thirds of the feature, and it was much deeper at the southern end than further north. This stratum (Stratum A) was a mixture of different colored clays, almost completely sterile. This soil must have been dug out of a hole somewhere else on the site, probably the cellar of the new house (Feature 1) or the new well (Feature 27). Stratum A was 18 inches deep in the southern end of the cellar and generally less than 8 inches thick elsewhere. Beneath Stratum A in the southern half of the feature was Stratum B, which was very similar except that it contained more loam and a few more artifacts. It, too, had been dug out of another hole, but it was from closer to the surface and therefore included some of the topsoil. Stratum C, which was beneath Strata A and B in the center of the cellar, was the top stratum at the northern end and was not present at all at the southern end. This stratum was a dark yellowish brown clay loam, and it contained ash, oyster shell, and many artifacts. The artifacts were judged to date to the eighteenth century, since they included creamware, delftware, comb slipware, and Westerwald blue and gray stoneware but only two small pieces of pearlware (post-1775), and they included several unusual items, such as a chain and locket, a fragment of a mirror, and three ivory fan blades.

Beneath Stratum C in the northern half of the cellar was a dense deposit of rubble, designated Stratum D. The rubble consisted mostly of brick and sand mortar, with some nails, window glass, and fragments of stone and a few artifacts. In Unit 5, near the northeastern corner of the cellar, this stratum contained substantial pieces of burned boards. This stratum appeared to have derived from the destruction of the early house. Apparently, what was left of the structure after the usable stones and bricks had been salvaged was dumped into the cellar hole. The presence of so many bricks suggests that the chimney of the house was at least partly brick. (It was common to build chimneys with stone up to the level of the eaves and with brick above that level.) The burned boards in the fill, along with the burned steps, suggest that the house was destroyed by fire. The identifiable nails in this stratum were all handwrought. (Nail-making machines were introduced around 1790, and machine-cut nails are common after 1800.)

The bottom layer in the cellar, Stratum F, consisted of sand that had washed into the cellar. In the northwest corner of the cellar, in Excavation Unit 4, layers of this sand were also found higher up, between layers of rubble and fill. This washed-in soil shows that the cellar stood open for some time before it was completely filled in. Since no artifacts were found in the bottom of the cellar, it appears that the house was empty when it burned. It had probably been abandoned for some time, and it may even have been intentionally burned, which was sometimes done to make removal of nails and other hardware easier.

3. Feature 29, Well, 1750 to 1800

Feature 29 was a well located 7 feet east of Feature 4, the cellar of the earlier house, and it was probably also part of the earliest phase of occupation. On the surface the well was about 7 feet

across, but it had been widened somewhat by erosion, and it appears that the well shaft was originally about 5 feet in diameter. The only evidence of lining in the well was a thin dark stain around the edge in some places, probably indicating that it was originally lined with wood. Postholes on the south and east sides of the well showed that it had been covered by a wooden structure. The well was excavated to a depth of 8 feet below the base of the plowzone. The top 4 feet of fill in the well consisted of three strata of rich, loamy soil mixed with ash, oyster shell, bone, and numerous artifacts, a typical household trash deposit (Figure 12; Plate 11). This deposit contained many interesting artifacts, including a brass candle holder and large, mendable pieces of many ceramic vessels. Because of the ash and oyster shell, which create an alkaline environment, preservation of bone was excellent, and numerous tiny fish bones and fish scales were recovered. Samples for flotation were taken from all of these strata in the hope of recovering plant remains and even smaller bones.

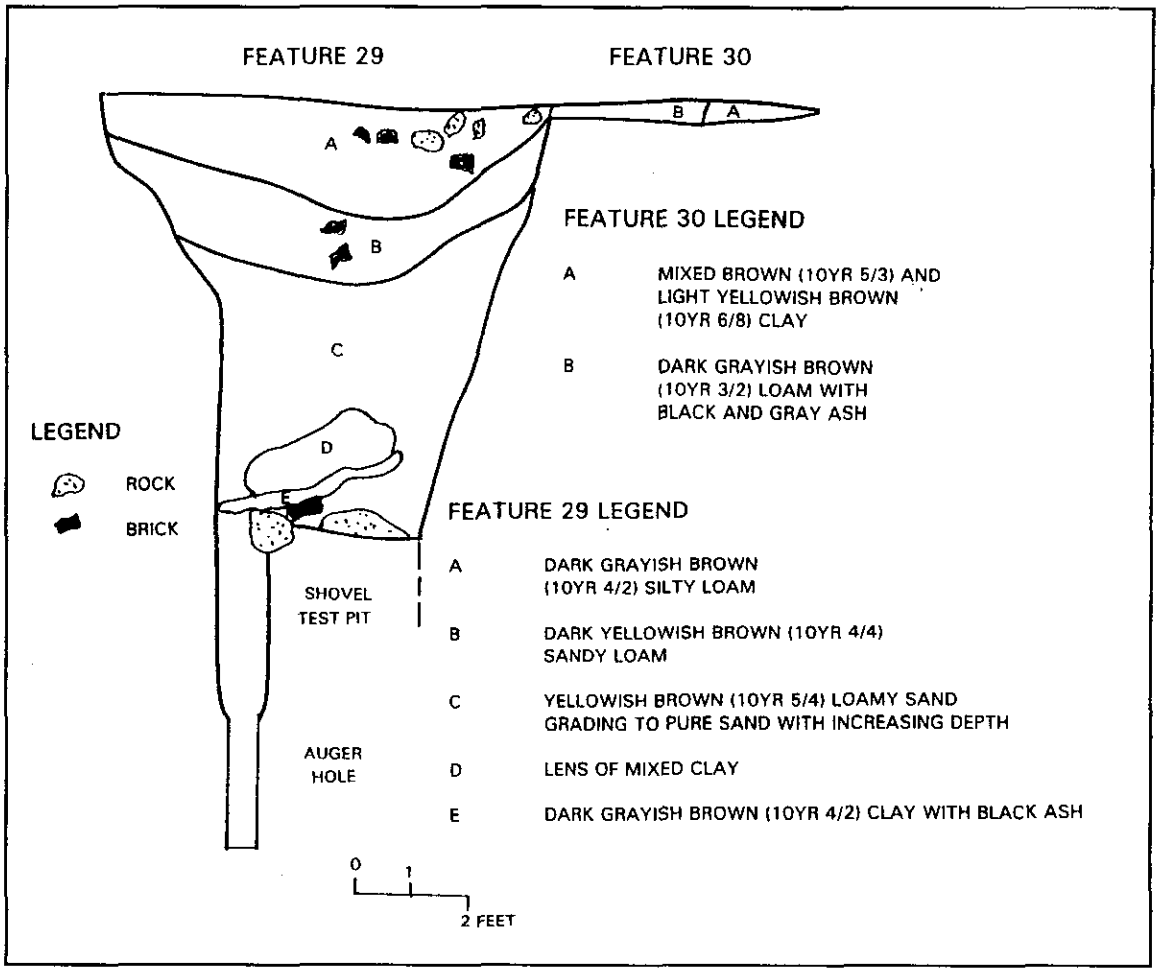

FIGURE 12: Profile of Features 29 and 30, Well (1750-1800) and Associated Pit

For reasons of safety, excavation of a small space such as a well cannot be continued past a depth of 4 feet without installing shoring or stepping out the sides. Since the well was still yielding artifacts at the depth of 4 feet, a backhoe was used to expand the hole to permit deeper excavation.

The well was then excavated to a depth of 8 feet. This portion of the well yielded few artifacts, and by the bottom the fill had turned to nearly sterile sand. This fill was tested with an auger to a depth of 12 feet, and all of the soil in the auger hole was sterile sand. Excavation of the well was therefore abandoned.

It sometimes surprises people to learn that wells, which required so much effort to dig, were commonly used as trash pits. In the days before steel pipe and concrete culverts, however, wells were never expected to last forever, and wood-lined wells had particularly short life expectancies. The lining at the bottom rotted—even brick, which was not nearly as hard in the eighteenth century as it is today, rotted when it lay in the water—the bottom of the well started to silt up or even collapse, and after a certain point it was cheaper and safer to dig a new well than to keep trying to repair the old one. An abandoned well was both a safety hazard and a perfect place to throw trash, so most abandoned wells were soon filled.

4. Feature 30, Pit Adjacent to the Early Well

Feature 30 was a shallow pit adjacent to Feature 29, the earlier well. The oblong pit measured about 7 feet by 3 feet 6 inches and was 6 inches deep. The feature contained two layers of soil. The fill in the eastern half, away from the well, was a layer of redeposited mixed clay that was designated Stratum A. In the western half was a layer of very dark brown clay loam mixed with large amounts of gray ash, apparently a deposit of hearth sweepings, designated Stratum B. Excavation showed that Stratum B was actually on top of Stratum A, although the line between them was not far from vertical. Both the well itself and the postholes associated with it appeared to cut through Feature 30, so it seems that this pit had been filled in before the well was dug. Feature 30 thus appeared to contain one of the oldest deposits on the site. The artifacts recovered all dated to the eighteenth century, including sherds of redware and faience or delftware, wine bottle glass, and a handwrought nail. Feature 30 may have been a hole left by the removal of a stump in the ground being cleared for the house, or a pit dug to obtain clay for brick making.

5. Feature 15, Dairy, 1800 to 1840

Feature 15 was a dairy of very interesting design (Figure 13; Plate 12). Dairy products, especially butter and cheese, were a vital part of the northern European diet, more important to poorer people than meat. Dairying was therefore a major part of farm life. In New Castle County, dairying had by 1800 developed into a commercial industry, and butter from farms was sold to town dwellers in Philadelphia and Wilmington. Dairying was primarily women's work, from milking the cows to packing the final product. On some farms it seems that the sale of butter earned up to half of the cash income, so the contribution women made to the household economy was a very important one (Jensen 1986). The processing of milk took place in a dairy or buttery, which could be either a separate building or a room attached to a house. The dairy had to be cool, because the milk had to be kept from spoiling for the 36 hours it took for the cream to separate. The dairy at the McKean/Cochran Farm was a separate structure measuring 11 by 13 feet. This building was completely excavated. It had stone foundations and was constructed like a springhouse, a common

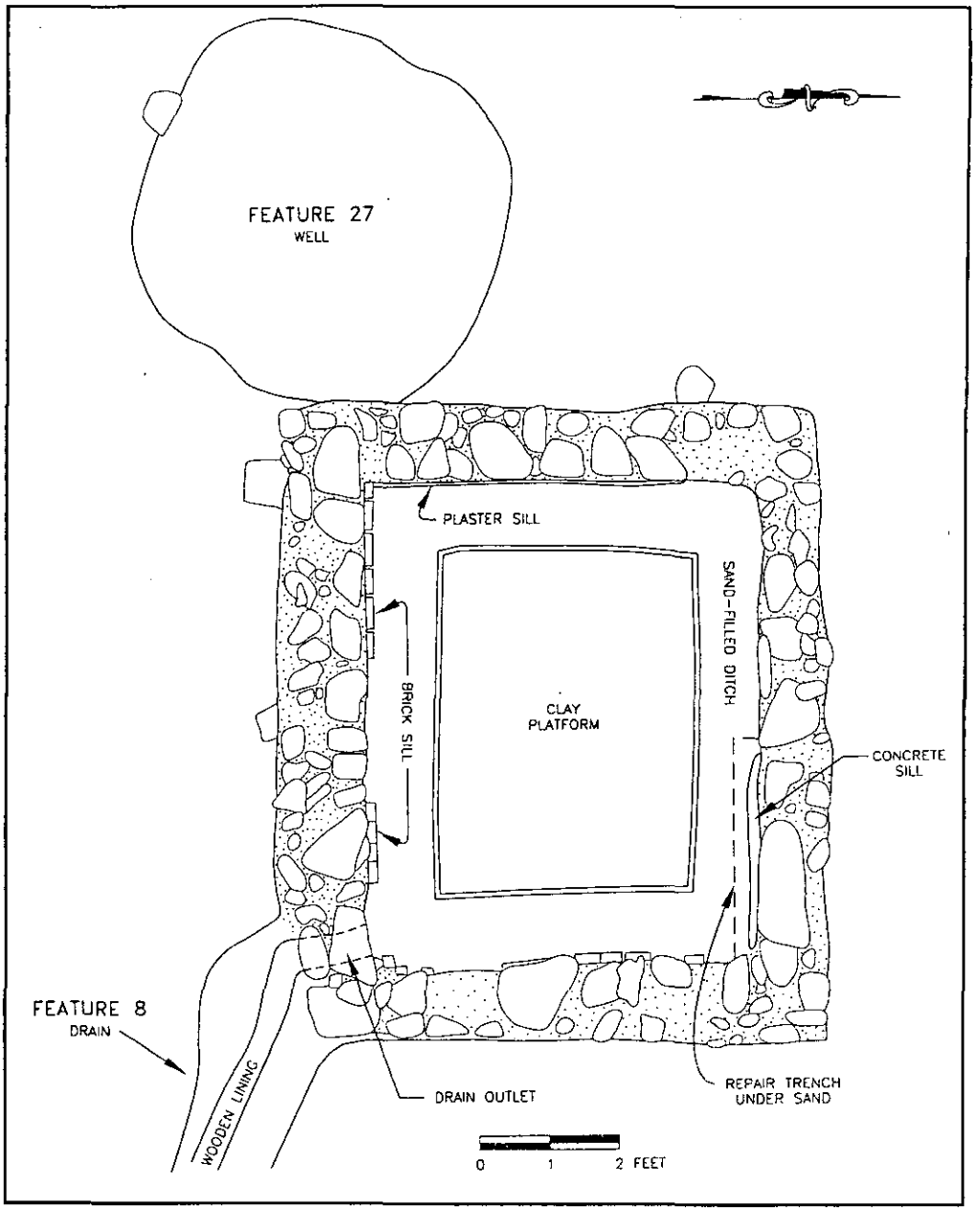

FIGURE 13: Plan of the Dairy (Feature 15), the Drain (Feature 8), and the Later Well (Feature 27), 1800-1840

form of dairy building in Europe and in Pennsylvania. The dairy had a working platform in the center, a channel for water around the inside of the walls, and a drain for the water to exit in one corner (Plate 13). However, there was no spring on the site. The water to cool the dairy must have come from the adjacent well, Feature 27. The dairy therefore represents a traditional technology used in an unfamiliar and inappropriate environment, a springhouse on land without a spring.

The foundations of the dairy varied from 18 inches to 2 feet in thickness. They were constructed of uncut stones fitted together very roughly, so that the walls contained large chunks of sand mortar. Some of the stones used were more than 2 feet across and weighed over a hundred pounds. These

PLATE 12: Feature 15, the Dairy, and Feature 27, the Later Well, 1800-1840

stones were massive enough to resist destruction by the plow, and the foundations of the dairy projected up through the plowzone almost to the surface; over the years they must have given farmers many nasty jolts. The maximum surviving height of the walls was 2 feet 1 inch, about half in the plowzone and half below it. The walls were plastered on the inside. The stones did not rest on natural subsoil but on a platform of clay up to a foot deep, which extended across the entire structure. The builders must have dug out an 11-by-13-foot hole, 3 feet deep, and then filled in the bottom foot with clay before they started erecting the foundations. The clay was probably intended to make the floor hold water.

Running around the inside of the dairy walls was a ditch or channel 1 foot 2 inches across and 3 to 6 inches deep. The ditch was filled was dark yellowish brown sand. In the center of the dairy, surrounded by the ditch, was a level clay platform, formed of the same clay that underlay the foundations. Around the inner edge of the ditch, between the sand ditch fill and the clay of the platform, was a thin layer of dark loam containing nails spaced about a foot apart. This layer appears to have been the remains of a wooden lining on the inside of the ditch. The outside of the ditch was the inside of the foundation walls. Around the inside of these walls was an almost continuous sill, about 2 inches wide, at the same level as the top of the platform. The sill was constructed of three different materials. Along the west wall the sill was plaster; since the plaster bonded with the plaster covering on the walls, this appears to have been the original sill. Along the south and east walls the sill was a single row of bricks set on their narrow sides; only about half of this brick sill survived. In the northeast corner of the dairy, along the north wall, a section of the sill just over 4 feet long was

made of soft, sandy concrete. A builder's trench dug into the sand around this concrete sill showed that it was a later repair, made after the ditch had been allowed to fill up with sand. The whole arrangement of ditches sloped down toward the southeast corner, where a hole in the foundation wall allowed the water to flow out into a drainage ditch, Feature 8, that carried it off the site.

The small section of concrete sill in the dairy is interesting for two reasons. Building with poured concrete was rare in America before about 1830, so this repair may date to a period after the houses on the site had been abandoned, showing that the dairy, and possibly other farm buildings, continued in use after the Cochran family had moved elsewhere. Because the sand in the ditch had to be dug away to construct the sill, it seems that the original scheme of the dairy, using water hauled up from the well and poured through the ditch, had been abandoned, and the ditch allowed to fill with sand (or possibly even deliberately filled) before the structure itself was abandoned.

Above the level of the ditch and platform, Feature 15 contained two layers of soil (Figure 14). The top layer, Stratum A, was a dark loam very similar to the plowzone, up to 1 foot 3 inches deep, containing numerous small artifacts. This deposit contained sherds of whiteware in styles not made until 1825 and yellowware dated to after 1827, and it appeared to be the most recent on the site. The artifacts, therefore, also suggest that the dairy continued in use after the houses on the site had been abandoned. These artifacts included many tablewares, such as fragments of plates and cups,

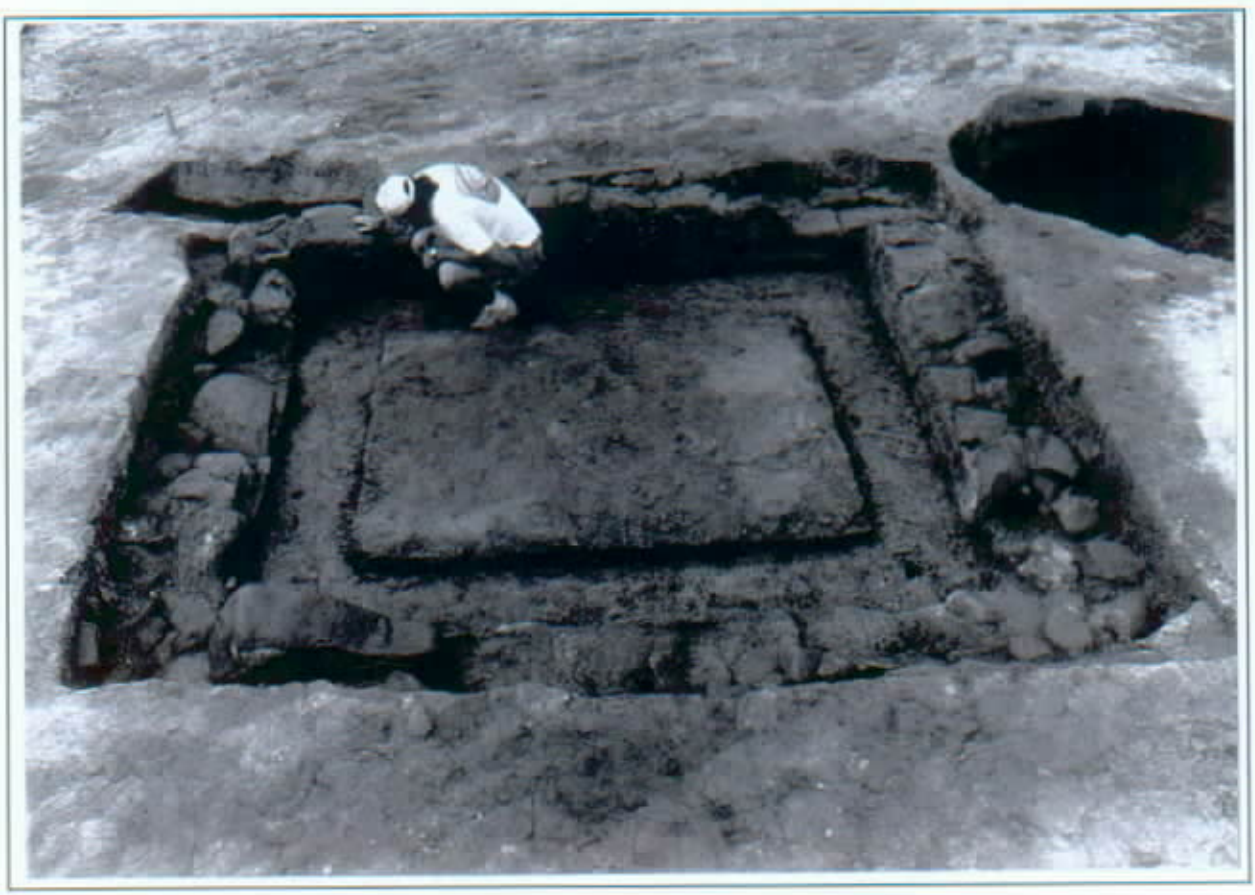

PLATE 13: Feature 15, the Dairy, and Feature 8, the Drain, 1800-1840

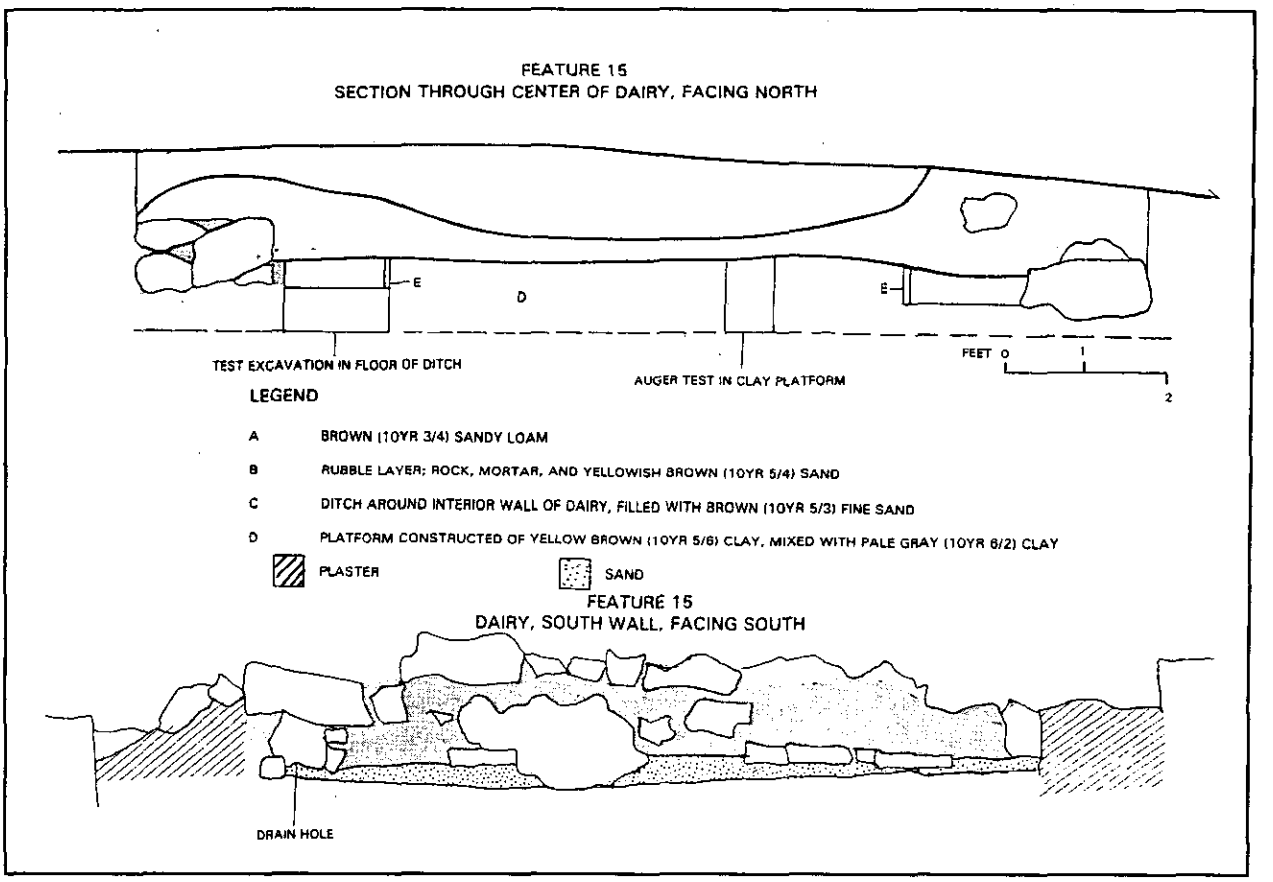

FIGURE 14: Profiles of the Dairy, Feature 15, Filled in Around 1840

indicating that someone probably lived on the farm, or even in the dairy, after the Cochrans had moved away; that is, the site was not just a work area or outlying farm for people living elsewhere. Beneath Stratum A was a deposit, called Stratum B, consisting of stone, brick, and mortar and containing very few artifacts. Stratum B seemed to derive from the destruction of the dairy itself. It lay directly on the floor of the dairy. It contained several pieces of window glass, so the dairy probably had at least one window. As very few other artifacts were found in or beneath the rubble, the dairy was probably empty when it was destroyed. The small size of most of the objects in Stratum A suggests that they had all been disturbed by the plow, or at least that they had lain on the ground to be stepped on, for some time before they were deposited in the feature. Therefore it seems that the feature filled in naturally, by erosion and plowing, after the structure had been torn down.

6. Feature 8, Drain

Feature 8 was a drainage ditch attached to the southeast corner of the dairy (Feature 15; see Figure 13). Water exiting the dairy through the hole in the south wall entered this ditch, which ran off to the southeast. The ditch could be traced for a length of 16 feet before it disappeared into a series of shallow pits. The ditch did not run directly down the slope, to the south, but angled eastward. Perhaps the shallow pits at the end of the ditch represent a wallow in the hog pen, toward which the ditch directed the water, or perhaps there was some structure, of which no evidence now survives, immediately south of the dairy. A small portion of Feature 8 adjacent to the dairy was excavated.

This excavation showed that the surviving ditch was 10 inches deep at its upper end. The ditch had been lined with wood, and part of the lining still survived in the floor. The fill in the ditch all consisted of washed-in soil, with few artifacts.

7. Feature 27, Well, Filled After 1825

Feature 27 was a well that appeared to date to the later period of the site's occupation. It was located adjacent to the dairy, Feature 15, and was probably the source of water for the dairy (see Figure 13; see Plate 12). Postholes along the south side showed that the well had been covered by a wooden structure. The feature was completely excavated to a depth of 5 feet below the base of the plowzone, and an auger was used to test it to a depth of 10 feet. The fill in the excavated portions consisted entirely of washed-in silt and sand. This soil did contain some artifacts, especially near the top, but it appears that they simply washed into the well after the site had been abandoned. The artifacts included ceramics which were not made until after 1825, dating the well to the last phase of the site's history. Since the artifacts did not constitute an intact deposit, and the artifact frequency was declining, no attempt was made to excavate deeper into the well.

8. Feature 1, Cellar, 1800 to 1830

Feature 1 was the cellar hole of the second house on the site (Figure 15; Plate 14). This feature had been discovered in one of the shovel test pits dug during the Phase II evaluation, which had been excavated as deep as we could reach without ever encountering the bottom of the feature. After the stripping of the plowzone, the cellar was revealed as a large but nearly amorphous brown stain, without distinct edges or corners. Only after the excavation of a unit near the edge of the feature, which came down on stone foundation walls, was it clear that this brown stain was really a cellar. The uneven shape probably represented erosion that took place while the cellar was filling in.

Excavation revealed that enough of the stone foundations of the house survived to determine a good deal about the house. The main foundation measured 26 by 18 feet. For excavation the cellar was divided into 18 units, measuring up to 2x2 meters. When it had been determined that the top fill in the cellar was a deep layer of largely sterile soil that had simply washed in, a backhoe was used to remove as much of that soil as possible. The remainder of the cellar fill was completely excavated and screened. Several 2-liter soil samples were taken for flotation from the artifact-bearing layers.

The foundation walls were constructed of large stones, a few of which had been roughly worked but most of which were in their natural, river-worn state. The stones had been fitted together carefully, so the walls contained less mortar than those of the dairy. The largest stones were in the lowest course; some of these were 4 feet long and 2 feet tall. The inside of the wall had been plastered smooth. Although the foundation was a solid construction, it was not geometrically perfect. None of the corners was exactly square, and the walls varied in thickness and were not exactly straight. As a result, the east-west distance between the interior sides of the walls varied from 13 feet 7 inches to 14 feet 5 inches.

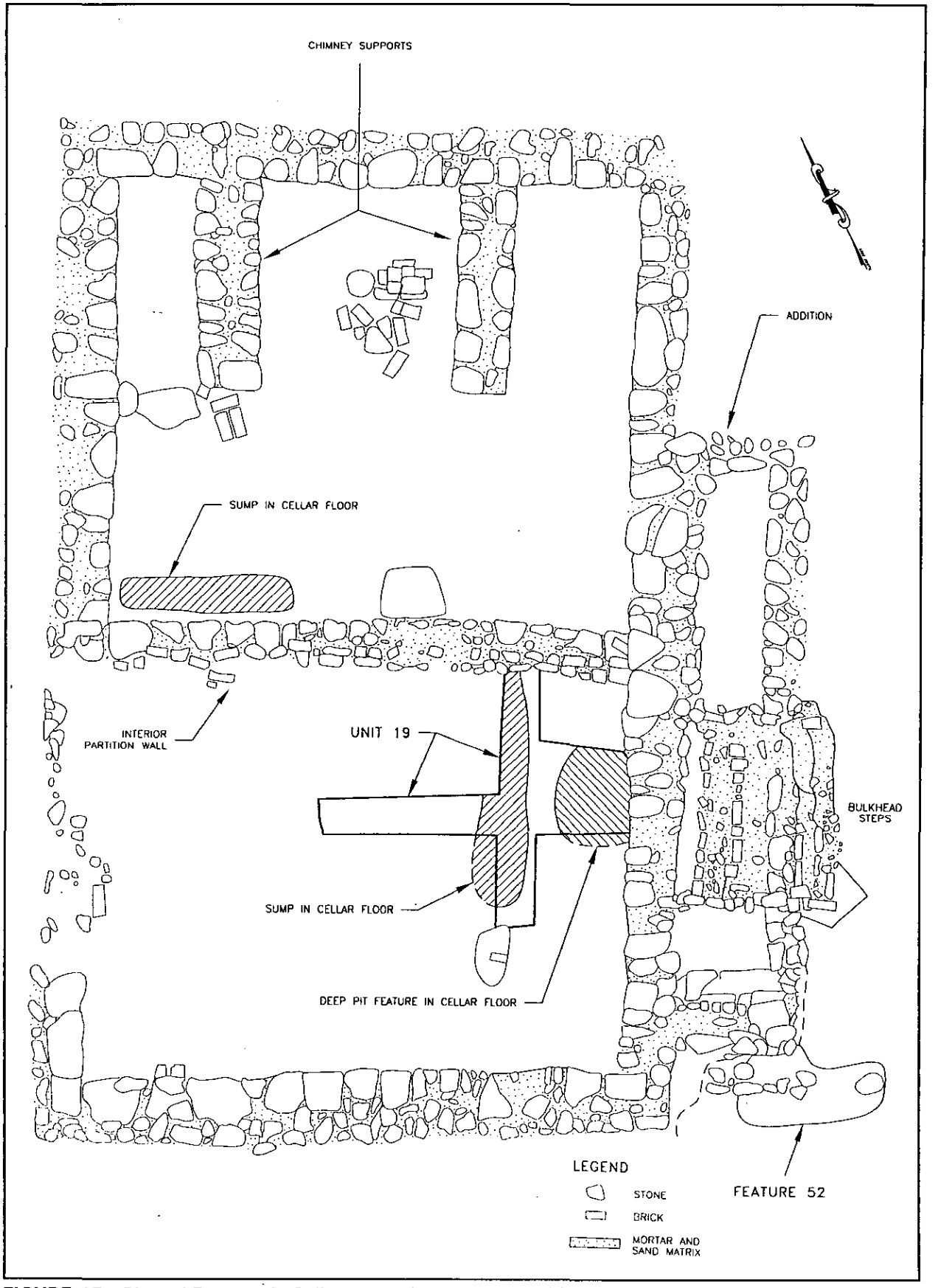

FIGURE 15: Plan of Feature 1, Cellar of the Later House, 1800-1830

PLATE 14: Feature 1, the Later Cellar, 1800-1830, from Overhead

PLATE 15: Feature 1, the Later Cellar, 1800-1830, Overhead View of Steps and Addition

Outside this main cellar on the east side were a bulkhead entrance and what appeared to be an addition (Plate 15). Two massive stone piers in the north end of the structure were probably the base of a vaulted chimney support. Near the cellar were two groups of unmortared bricks that appeared to be approximately in place. Three bricks at the end of the western chimney pier, in particular, must have been some sort of structural element, perhaps the support for a wooden post. The southern half of the cellar was 3 feet 8 inches deep. A stone and brick wall divided the cellar from east to west, and the north room had been excavated approximately 1 foot 8 inches deeper than the south room. The walls had been partially robbed, and one stretch along the west wall had been entirely removed. A clear robber's trench (a trench dug to remove usable stone from a backfilled cellar hole) was visible in profiles along the south wall.

The bulkhead entrance, which was on the east wall of the house, in the south room, appeared to be a later addition to the house. The steps were brick, about 4 feet 9 inches across. Parts of six steps were preserved, but they had not been very well constructed and were not in good shape. The steps ran across the foundation wall of the east addition, and one step rested on the addition's foundation wall. Most of the remaining bricks rested on dark, loamy soil, full of artifacts, that had been shoveled into the addition to form a ramp and then shaped into steps. Steps built in this way would not have been particularly strong or long-lasting, but the technique was used in at least one other eighteenth-century house in Delaware (Thomas et al. 1994:II-78) and may have been common. No

trace of an earlier bulkhead entrance was noted. However, a stone set in the cellar floor, near the southeast corner of the house, had a notch cut into the top that appeared to have been designed to receive a wooden post. This post may have been part of an interior stairway. There was also no evidence that a door was cut through the foundations when the steps were constructed, so there must already have been a door in this location, probably connecting the cellar to the addition.

The east addition measured 16 feet 5 inches north to south, along the wall of the house, and 3 feet 3 inches east to west. The foundation wall of the east addition was stone, 1 foot wide (narrower than the walls of the main house), and it survived to a height of 1 foot 4 inches above the cellar floor. The wall was probably never any taller. The top of the wall was level and flat, and a retaining wall built when the stairs were added rested on top of the wall at this height. The floor of the addition, a small, narrow space, was covered with 11 inches of sand. This sand was largely sterile, but near the bottom of the sand layer were lenses of black loam with oyster shell. This sand and shell floor, apparently designed to provide a dry, well-drained surface, suggests that the addition was a storage cellar primarily intended for keeping root vegetables such as potatoes, carrots, and turnips. Since the bulkhead steps were later constructed across the addition, it seems likely that it was connected to the main cellar by a door. Although the steps were constructed across the addition, splitting it in half and taking up about 40 percent of its already limited space, it seems that the addition was not wholly abandoned. The fill in the addition on either side of the steps was the same as the fill in the main cellar, so the cellar was filled in at the same time as the addition. Probably the space left on either side of the bulkhead steps continued to be used for storage even after the steps had been built.

The possibility was considered that this addition was the original entrance to the cellar, with the steps coming down from the south, parallel to the cellar wall. Several small stones on top of the addition's south wall looked very much like a step, complete with a space for a wooden sleeper along the edge. Closer examination showed that the addition had not been an entrance. The stones on top of the south end of the foundation wall, which resembled a step, rested on fill similar to that under the steps, so they also appear to have been a later addition. They were probably intended to support some part of a new wooden structure erected over the bulkhead. Also, testing south of the addition showed that the subsoil exterior of the feature rose up steeply beyond the wall, too steeply to have supported steps.

The wall that divided the north and south rooms was built mainly of stone. The wall was about 1 foot thick and 1 foot 8 inches high, the same as the difference in depth between the north and south rooms. A single line of bricks ran along the top of the wall, and probably supported a wooden partition wall. A single large stone rested against the north side of the wall near the center of the cellar. The stone was used by the excavators as a step when passing between the two rooms, and this may have been its original function. It is also possible that it was part of the substructure of a set of wooden steps, like the stones under the bottom of the wooden bulkhead stair in the early cellar (Feature 4). Just north of the wall, in the southwest corner of the north room, a sump had been dug into the cellar floor. (A sump is a hole dug in the floor in the deepest part of a cellar to collect water, making it easier to bail out any water that accumulates.) The sump was 4 feet 7 inches long, 1 foot wide, and 10 inches deep. The fill in the sump was silty sand that appeared to have washed in.

The cellar hole contained two main layers of fill (Figure 16). The top layer, designated Stratum A, was shallow along the edges of the feature but up to 3 feet deep in the center. This stratum consisted of dark grayish brown silt, obviously washed into the cellar after it had been abandoned, and it contained relatively few artifacts. Once it had been determined that this stratum was primarily washed-in silt, much of it was removed using the backhoe. Beneath this stratum in most of the cellar was a layer of rubble, which was designated Stratum B. The rubble layer contained large stones like those in the foundation, bricks, mortar, plaster, and more than 17,000 artifacts. Stratum B was shallow in the center of the southern room, about 6 inches thick. Around the walls in the southeast corner it was up to a foot thick. In the southwest corner, where the wall had been completely robbed, Stratum B was not present at all. The bulk of the rubble, however, was in the north room. In the center of the room, around the chimney supports, was a massive pile of stones, rising 5 feet from the cellar floor to the bottom of the plowzone. This pile presumably represented the chimney, which collapsed into the cellar after the house had been abandoned. Since stone and brick were present in this pile, the chimney had probably been constructed of stone to a point even with the ceiling of the second floor, and of brick above that level.

The artifacts in the rubble fill included more than 3,700 fragments of window glass, large quantities of ceramics, predominantly redware, pearlware, whiteware, and porcelain, hundreds of animal bones, including fish scales and small bird and fish bones, several bone-handled knives, a pewter spoon, a stirrup, a spur, and the metal remains of a barrel. The unusual objects recovered included an intact stoneware ink bottle, a surgeon's lancet, and a single small cannon ball. Almost 3,000 nails were found, and nearly all of the identifiable nails were handwrought. Machine-cut nails became increasingly common after 1800, so the house cannot have been built long after that date. Since the cellar of the previous house (Feature 4) contained a sherd of pearlware datable to after 1795, the construction of the house at Feature 1 can be dated to the years from 1790 to 1805. The destruction of the house can be dated by the objects found in the fill. Sherds of pearlware were found decorated in a style that was not used until after 1815, so the house cannot have been demolished, and the cellar filled, until after that date. A single "modern" cut nail was found, datable to after 1830, but it is dangerous to date a large deposit on the basis of a single, small artifact, which might have fallen down through a gopher hole. No whiteware, a type of ceramic common after 1820, was found in the cellar. A date of 1820 to 1830 seems reasonable for the destruction of the house. Beneath Stratum B in the north room were several lenses of washed-in sand and silt, suggesting that the structure may have been left open to the elements for some time before it was demolished. Few artifacts were found in or under these wash layers. The cellar, like that of the earlier house, was probably empty when the house was demolished, indicating that the house had been abandoned before it was torn down.

The floor in the north room of the cellar was natural subsoil, as was the floor in the southwest corner of the south room. The south wall of the house rested on natural subsoil. However, most of the floor in the south room was redeposited clay. Trenches, collectively designated Unit 19, were dug through this clay floor to determine its depth and see what lay beneath. This fill, which contained very few artifacts, was shallow in the southern part of the room but deepened toward the center wall of the house, sloping down to the bottom of the wall. When the center wall was constructed, the floor on

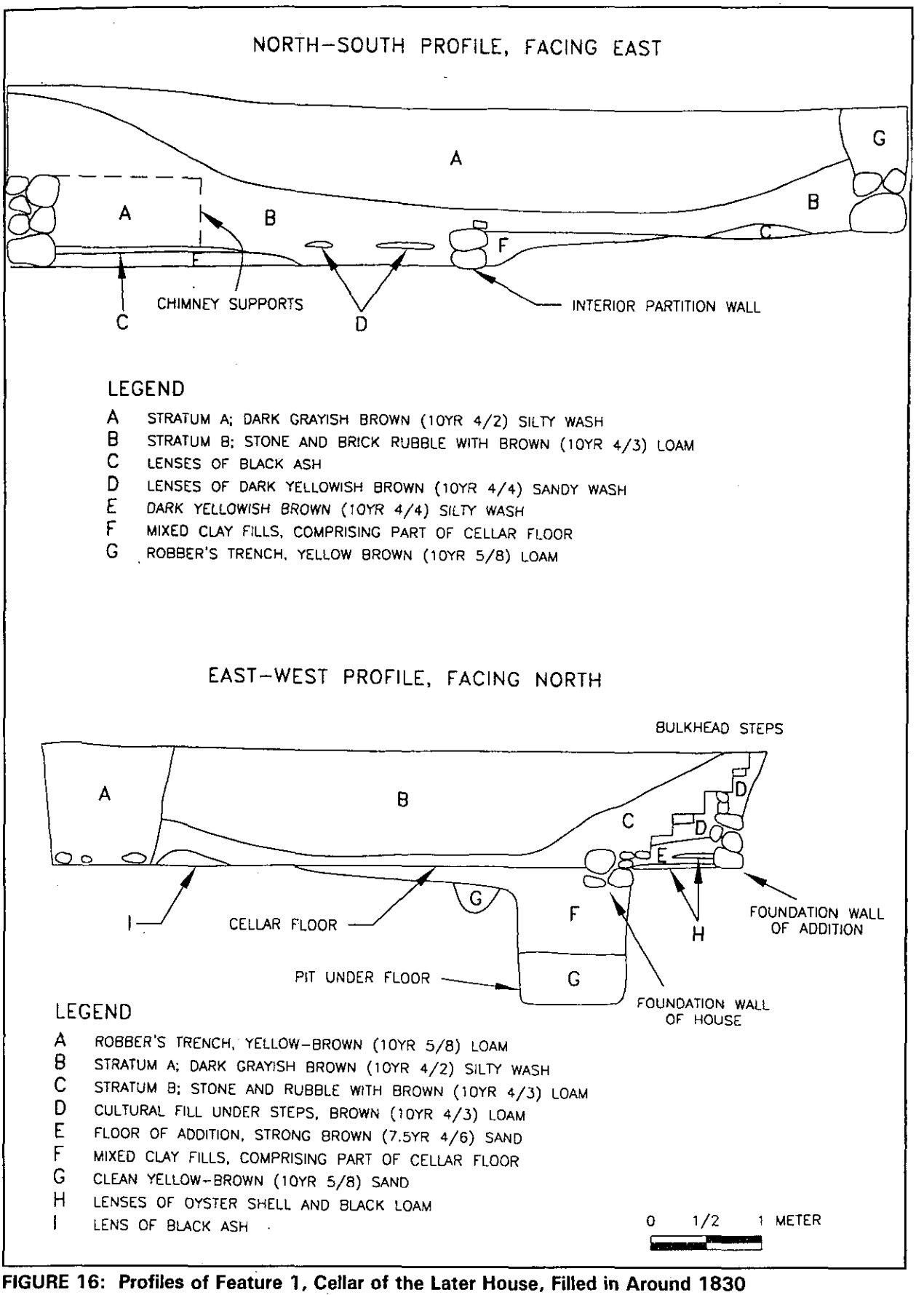

FIGURE 16: Profiles of Feature 1, Cellar of the Later House, Filled in Around 1830

both sides was nearly even, and the south side was then built up with clay to the level of the top of the wall. The large stone on the floor in the southeast corner of the house, which might have been the base of a stair post, was set 2 inches deep into the clay floor. The use of such clay flooring to level a basement floor was not unusual, and it has been found in other eighteenth-century houses. More puzzling were two pits found underneath the clay floor. The first one discovered was a narrow trench, about a foot wide, that extended south from the central wall about 6 feet into the south room. This trench was about 18 inches deep, with steep sides and a flat bottom. It was filled with clean, yellowish brown sand. Toward the interior wall, the trench was cut through by the clay fill of the floor, showing that the trench had been excavated and filled in with sand before the north room of the cellar was dug to its final depth and the center wall installed.

Just a few inches east of the trench a second and even more unusual subfloor feature was found. This was a roughly round pit, 3 feet in diameter, that extended to a depth of 4 feet below the eventual cellar floor. The bottom of the pit was thus nearly 8 feet below the bottom of the plowzone and at least 9 feet below the historic ground surface. The upper 2 feet 9 inches of the pit was filled with clay identical to the cellar flooring; below that was yellowish brown sand identical to the sand in the shallow trench. The pit extended below the east foundation wall of the house to about the center of the wall. The pit had, therefore, been completely filled before the foundations of the house were laid. A few artifacts were recovered from the clay fill in this feature.

The presence of the subfloor features shows that the hole that later became the cellar (Feature 1) had a complex history, but the sequence of events is far from clear. Taken by itself, the deep, round pit might have been interpreted simply as a shaft feature that had been dug down from the surface. When the builders decided to put the house in this location, they would have filled in that part of the shaft that went deeper than the cellar floor. However, this interpretation cannot hold for the shallow trench, which was too narrow to have been dug down from the surface. Since the two features contained identical fills, they were probably dug and filled at the same time. Therefore, the first action on the spot was almost certainly the digging of a large hole, at least 10 feet across, with the shallow trench and the pit as parts. It is possible that Feature 1 was in fact the cellar of the second house on this spot. However, a careful search for other evidence of such a house failed to locate any. If a completed cellar was constructed here before Feature 1, it was probably a rather small one, perhaps an ice house. More likely, these subfloor features represented the first stage of the digging of the eventual cellar. The design must have been changed during construction, leading to the placement of the east wall over the pit. Also, for some reason the construction was delayed long enough for sand to wash into the uncompleted cellar, leaving the deposits in both the trench and the pit. This scenario, while not altogether likely, seems to best fit the peculiar characteristics of the south room floor.

9. Structures A and B, Post Barns, 1750 to 1800

Just south of Feature 1 were two large post buildings, designated Structures A and B (Figure 17). The posts that formed the foundations of these structures were round and quite large, up to 1

foot 8 inches in diameter. The postholes in which the posts had been set were also large, ranging in size from 3 by 3 feet to nearly 3.5 by 5 feet. Most were about 1 foot 10 inches deep (Figure 18). Fifteen postholes made up the two buildings, both of which were almost certainly barns.

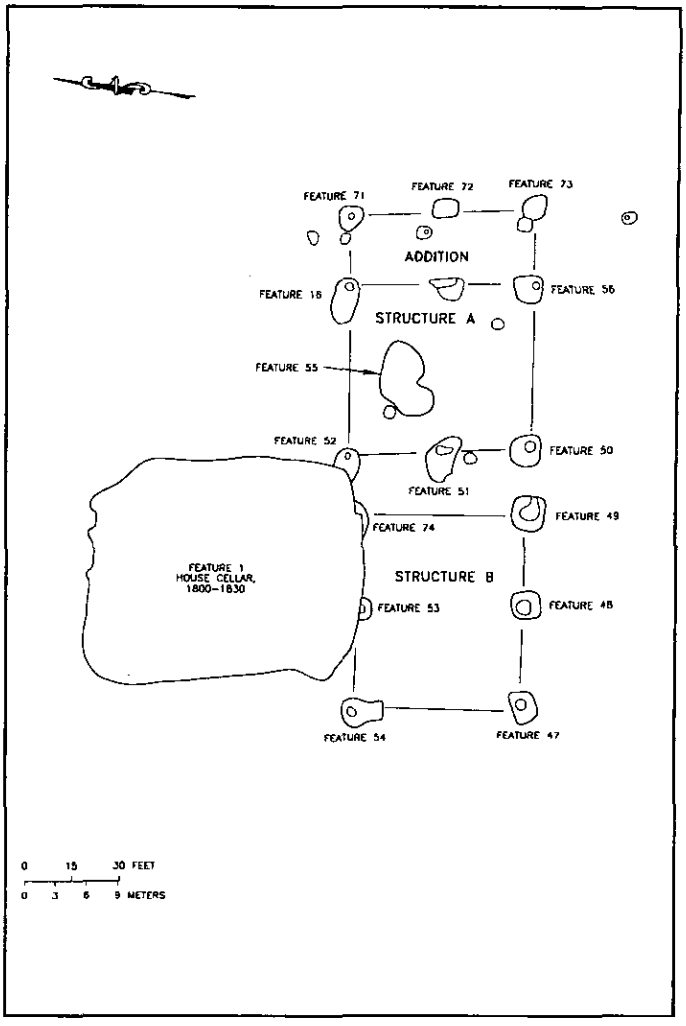

FIGURE 17: Plan of Structures A and B, Barns, 1750-1800

Structure A, the western building of the pair, measured 18 feet by 20 feet 6 inches and consisted of six posts, three on each of the long sides. These posts were designated Features 47, 48, 49, 52, 53, and 54. Each pair of posts was separated by about 10 feet. Ten feet was one of the most common lengths for a structural bay in the English tradition, and 18 feet was a common width for a building. Two of the posts on the northern side of the building had been truncated by the later cellar (Feature 1), showing that Structure A belonged to the earlier phase of the site's occupation, in the eighteenth century. The relationship of Structure A to the later cellar was not clear at first. A groundhog had dug a tunnel about where the post mold of the north-central post should have been, making it appear that the posthole had been dug into the fill of the cellar. However, careful excavation of the northeast post (Feature 52) later showed that it was clearly beneath part of Feature 1, Stratum A.

Structure B, located only 3 feet east of Structure A, was more complicated. It was made up of nine posts, in three rows of three, running north to south. Each row was 19 feet long, and the distances between the posts were equal, about 9 feet 6 inches. The distance between the western and central rows was 17 feet. The distance between the central and eastern rows, however, was only 7 feet 6 inches. The building thus measured about 25 by 19 feet. These measurements are all somewhat unusual, since British builders always had a strong preference for numbers divisible by two or three. The asymmetry of the structure was also unusual, since in most post buildings all the bays were the same size, as in Structure A. Most likely the structure originally measured 17 by 19 feet, and the eastern bay was an addition. These relationships can sometimes be determined by measuring the elevations of the postmold bottoms. The most common colonial technique for constructing post buildings seems to have been to put together two or more posts and their cross beams into a unit

before erecting them. Because the posts would be of equal length, the holes would have to be dug to the same absolute depth, or the roof line would be uneven. However, no two postmold bottoms in Structure A or Structure B had exactly the same elevation. Either the builders did not care greatly whether their barn roof was straight, or they raised the posts individually and then framed up the barn around them.

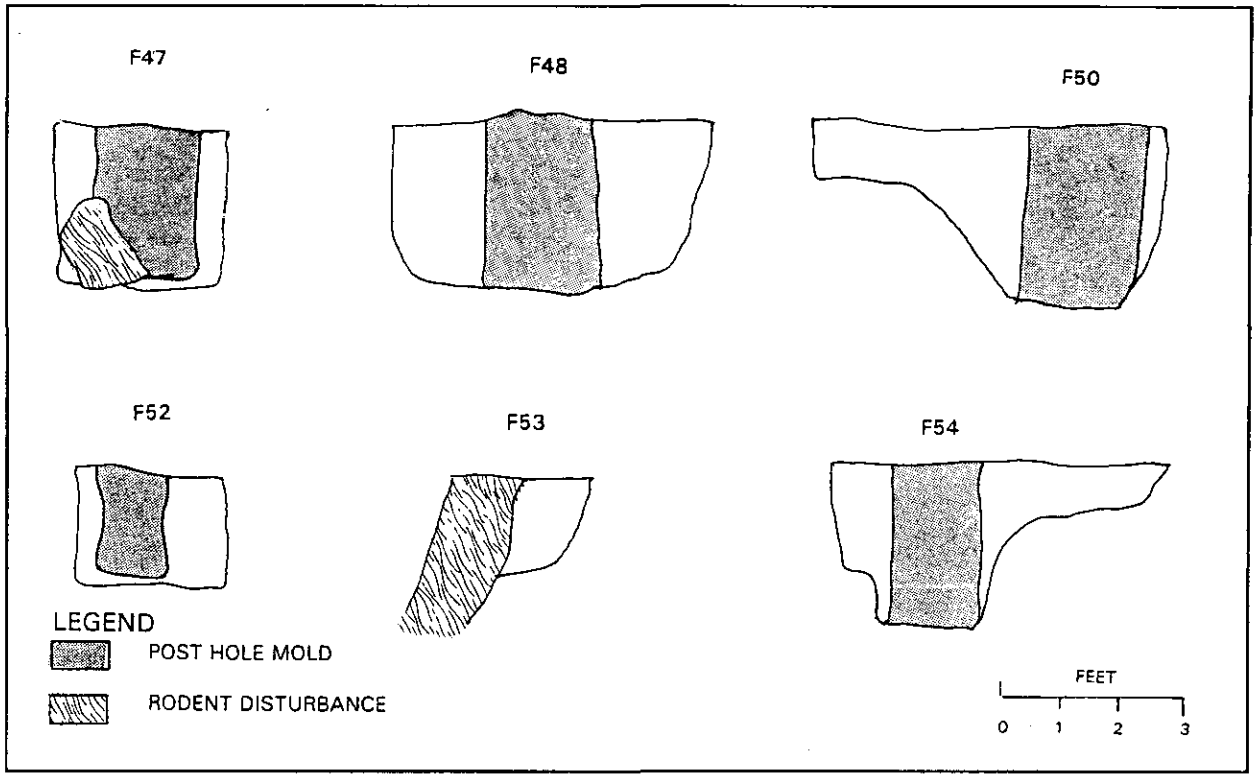

FIGURE 18: Profiles of Selected Postholes in Structures A and B, the Earlier Barns

The south sides of Structures A and B, the sides that would have faced the house (Feature 4), aligned almost exactly. Probably, therefore, they were standing at the same time. (Since the two structures were of different widths, their back walls did not align.) It was fairly common in colonial America for barns to be expanded over time as farms became established, and Structures A and B seem to represent such a development (Carson 1994:561). It is not possible at this time to tell which of the barns was built first. One way to determine such relationships among post structures is to consider the number of artifacts in the posthole fill. When a posthole is dug and refilled, any artifacts that were on the ground or in the topsoil will be incorporated into the posthole fill. The first postholes dug on a site should be nearly sterile, because there would have been few artifacts lying around. Holes dug many years later, after numerous small objects have been dropped on the ground around earlier structures, should incorporate more potsherds and nails. However, all the holes in Structures A and B were completely sterile. Either the construction of the barns took place within a fairly short period of time, or the site of the later barn was carefully cleared before excavation of the postholes was begun.

10. Smaller Features

a. Feature 55, Pit

Feature 55 was a shapeless pit located within the post barn known as Structure B. It measured about 7 feet 10 inches long by 4 feet 7 inches wide, and it was up to 10 inches deep (Figure 19). The fill consisted of mottled dark brown loam and dark yellowish brown loamy sand, and the edges were not entirely distinct. The feature yielded over 200 artifacts, including more than 100 bones, 78 nails,

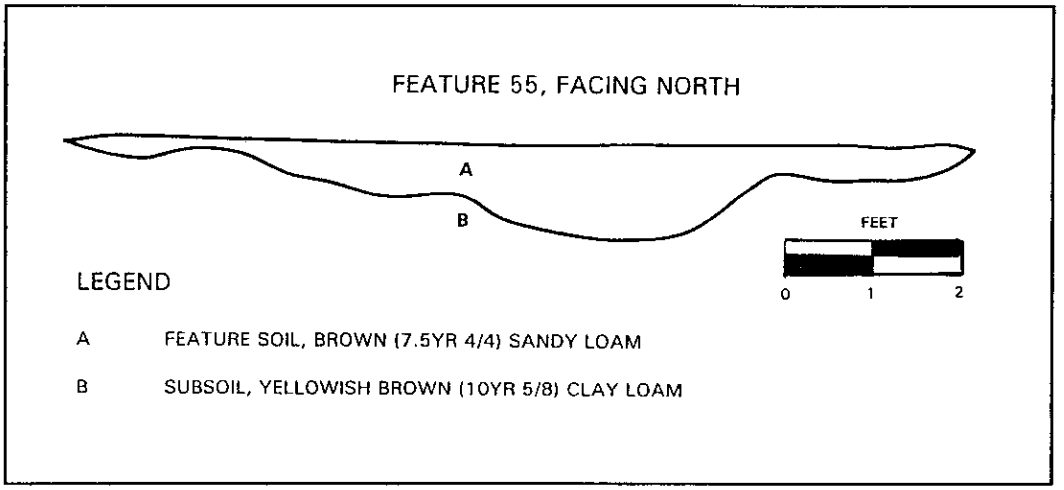

FIGURE 19: Profile of Feature 55, a Shallow Pit Within Structure B

a chisel, and 18 fragments of tobacco pipes. The only ceramics found in the feature were four small sherds of red earthenware. In general, there were many times more ceramic sherds than pipe fragments on the site, so the ratio of these items from Feature 55 is strikingly different from the overall pattern. Five miles away, at the Augustine Creek South Site, where a farm dating to about 1730 to 1760 was recently excavated, one part of the site was identified as a separate workshop area, where the excavators found many pipe fragments and few pieces of ceramics (Bedell 1997). An image comes to mind of men smoking while they worked, although we should remember that in the eighteenth century many women also smoked pipes. In any case, the artifacts from Feature 55 seem to be objects dropped in a work area, not trash from the house or the kitchen. A clue to what work was carried out in this area is provided by the bones, which were primarily the waste from butchering cows, pigs, and sheep. The nails probably came from the destruction of Structure B, so Feature 55 was probably filled in at the time the building was torn down.

b. Feature 58, Pit

Feature 58 was a roughly circular pit located about 18 feet northeast of Feature 1. It measured just over 4 feet in diameter and was up to 8 inches deep. The fill was dark yellowish brown silty loam flecked with light yellowish brown sandy loam. The feature yielded more than 100 artifacts, mostly small sherds of ceramics, but including an iron wedge. The most likely interpretation of the feature

is that it was a tree hole later used as a trash pit. None of the artifacts were datable to after 1775, so the feature was probably filled in before 1800.

c. Feature 59, Pit

Feature 59 was a shallow, circular pit located about 4 feet west of the later house The fill in the pit was a brown sandy loam essentially identical to the plowzone. The feature contained 180 artifacts dating to the eighteenth century, including Westerwald stoneware and white clay pipestems. The most common artifact was nails. No pearlware or whiteware was recovered. The feature was probably in the front yard of the new house after it was constructed, but it appears that by that time the pit had been filled in. From the large number of nails present, it seems possible that the feature was actually filled in during construction of the house. One fork was found in this pit, and one screwdriver. The discovery of a screwdriver on an eighteenth-century site surprised many of the crew, but screws had been made in Europe since Roman times and were far from rare in colonial times. Because screws had to be forged individually, and the grooves cut by hand, they were quite expensive. For this reason, they were used only for such purposes as assembling wagon axles, where holding strength was essential.

d. Feature 38, Tree Hole

Feature 38 was a large, irregular feature located near the southeast corner of the site that appeared to be a burned tree stump, or perhaps two adjacent burned stumps. The feature measured 19 feet north to south and up to 10 feet east to west. The northern third of the feature was excavated as Unit 1, the southern third as Unit 2. The fill was mixed brown loam, black ash, and clay burned to a brick-orange color. The feature was about 8 inches deep in the center and the floor was very uneven, pockmarked by what appeared to be root holes. The brown loam in the feature did contain a number of artifacts, all datable to the eighteenth century, and more than 50 fragments of bone.

e. Feature 68, Pit

Feature 68 was a large, shallow, roughly oval pit just north of the northwest corner of the later house. The feature measured about 16 feet east to west and 7 feet north to south and was about 6 inches deep. The fill, like that in Feature 59 nearby, was nearly identical to the plowzone. Unlike Feature 59, however, Feature 68 contained very few artifacts, a total of seven items.

f. Features 31 and 32, Possible Postholes

Features 31 and 32 were oblong pits located about 2 feet north of Feature 29, the early well. Both measured about 2 feet long and 1 foot 8 inches wide, and they were 8 feet 10 inches apart. No clear post molds were visible in the holes. Feature 31 was completely excavated, and it proved to be 6 inches deep, with steeply sloping sides. The fill consisted of mixed brown loam and yellowish brown sand. Several artifacts were recovered, including a sherd of pearlware. Although these

features may have been postholes, it is not clear what they might have been part of, and an interpretation of the features as pits seems more likely to be correct.

g. Feature 34, Brick-Filled Pit

Feature 34 was a pit located east of the early cellar, in the sloping, badly eroded part of the site. The Feature was 6 feet 6 inches long and 2 feet 7 inches wide. Feature 34 was parallel to Feature 8, the drain attached to the dairy. A test excavation showed that the feature was about 3 inches deep. The fill in the feature was brown loam identical to the plowzone, except that it was full of brick pieces, some as large as half a brick. No other artifacts were noted in the feature. Because of the large quantity of brick, it seems likely that Feature 34 was somehow associated with a building that stood in this area.

11. Fences

The northern half of the McKean/Cochran Farm Site was covered with small postholes, a total of more than 80 (Figure 20). Fewer were found in the southern half and none along the southern edge, probably because severe erosion on the slope had washed them away. Although many holes were found, it was difficult in most cases to determine whether they were for fence lines or for buildings, and only about half of those found can now be explained. Only a few fence postholes were excavated.

a. Fence A

The most obvious fence line on the house ran almost completely across the site from north to south. The small posts were set at consistent intervals of 10 feet 6 inches, which was probably measured as 10 feet between posts by the builders. This fence cut the farmyard in half, and it exactly paralleled the plow scars on the site and the field ditch, Feature 47. It did not align with any of the buildings on the site. One posthole clearly cut through one of the holes of Structure B. Fence A was probably not built until after the McKean/Cochran Farm had been abandoned.

The only posthole in this line to be tested was Feature 63, near the center of the site. This hole was roughly square, 14 inches on a side, and 9 inches deep below the bottom of the plowzone. The post mold was round, 5 inches in diameter.

b. Fence B

Fence B was located in the east-central part of the site, east of the unfinished cellar (Feature 2). The interval between posts was not consistent, and some of the holes shown in the plan must not have been part of the fence. However, a few posts with a regular 8-foot interval are present, and the line executes a clear 90-degree corner, so it does appear to represent a fence. The corner in the fence was probably the southeast corner of the farmyard during the site's later period.

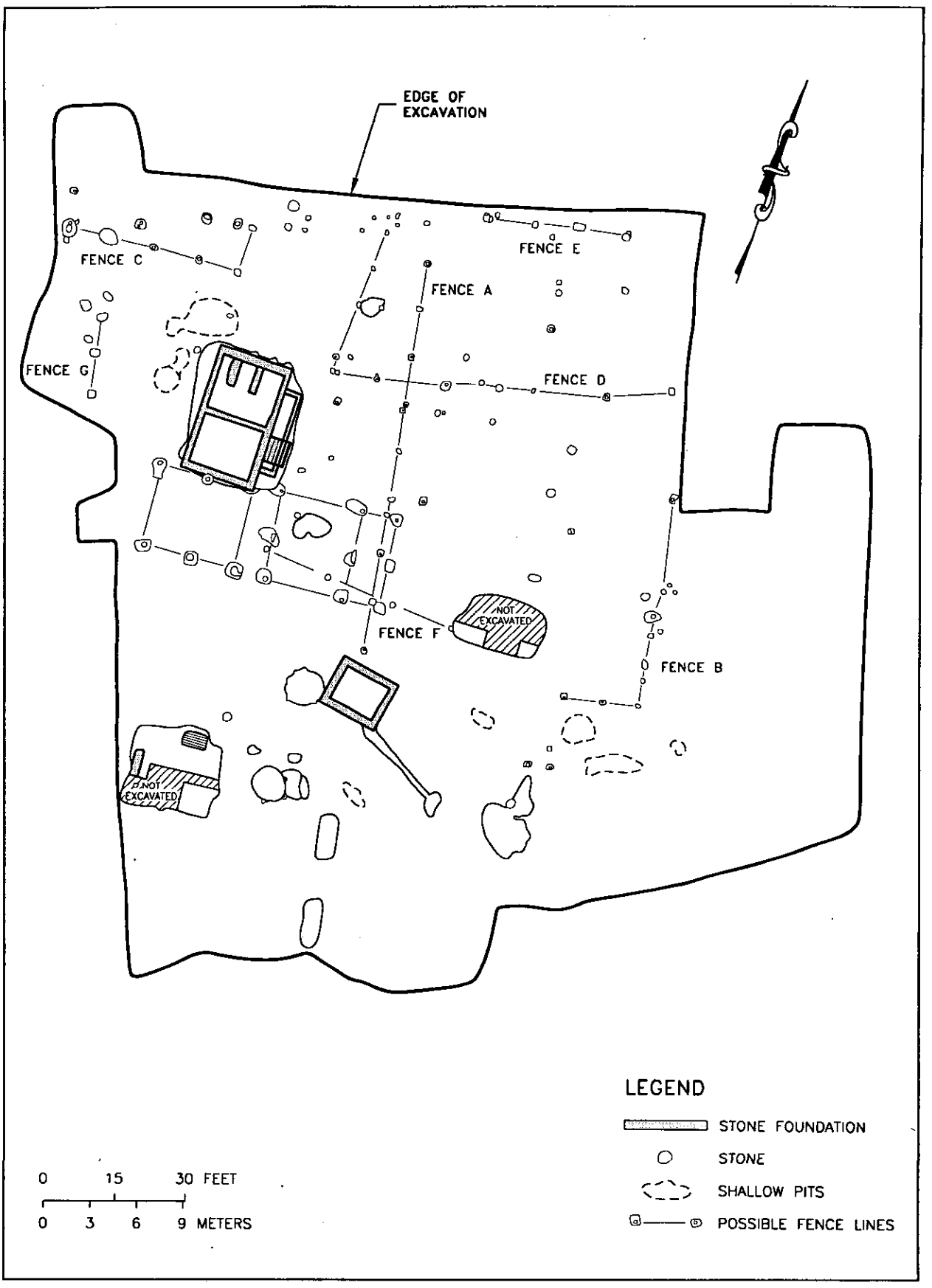

FIGURE 20: Plan of Fence Lines

c. Fence C

Fence C was a group of rather large postholes located northwest of the later cellar. The interval in the line varied from 10 to 12 feet. The two westernmost holes in the line, as far as the line was exposed, were both 3 feet 6 inches long, much larger than one usually finds in a fence and large enough to have been part of a substantial building. These holes had been in the northwest corner of the stripped area, and to search for the other side of this building the plowzone was removed from an additional area along the north edge of the excavation. This addition would have exposed any postholes up to 28 feet from the large holes in Fence C, but none were found. Therefore, these large holes do seem to have been part of a fence. The fence may have made a 90-degree corner, even with the front of the second house. If it did, it probably surrounded an area in the second-period front yard, possibly an orchard or garden. Several other postholes in this area could not be accounted for, so other fence lines or small buildings may have been present in this area.

d. Fence D

Fence D included two lines of postholes, neither with a consistent interval, located northeast of the later cellar The two lines appeared to meet at a corner roughly in line with the north wall of the house, 10 feet from the northeast corner. The angle between the fences was not 90 degrees, but closer to 80 degrees. The north-south part of the fence was roughly in line with the later house. The east-west line extended for about 60 feet across the farmyard. If these lines did represent a fence, it was probably part of the second-period farmyard.

e. Fence E

Fence E was a series of postholes, some at regular and some at wildly varying intervals, running east to west about 30 feet north of the later cellar. Four of the holes were grouped in a straight line at even 10-foot intervals, clearly a section of fence. The other holes, although not at regular intervals, seemed to indicate the general existence of a barrier in this location, probably the north edge of the second-period farmyard.

f. Fence F

Fence F was four small postholes set at intervals, located southeast of the later cellar. One end of the fence was at the southwest corner of the unfinished cellar (Feature 2), but the fence did not align with Feature 2. The date of this fence is not clear. The holes ran across Structure B, so they must have been dug either before Structure B was built or after it had been torn down, but it is impossible to say which.

g. Fence G

Fence G was an assortment of rather unusual holes, not even clearly postholes, located west of the later cellar. These holes were roughly rectangular, about 20 inches long, and the fill in them was

very clean redeposited subsoil, with none of the dark loam (topsoil) inclusions one usually finds in postholes. None showed any trace of a post mold. One of the holes, Feature 70, was excavated. It proved to be 7 inches deep, with straight sides and a flat bottom, obviously not a natural hole. Beyond that, no clear interpretation of these features could be made.