CHAPTER 4: RESEARCH DESIGN

J. David McMahan

Research Questions

A comprehensive research design, based on results of the 1995 testing program at Castle Hill, was set forth in a data recovery plan prepared by OHA (McMahan 1997) (Appendix 4.1). As a part of the federal review process, the recovery plan was developed in consultation with interested parties and reviewed by the Advisory Council on Historic Preservation. This plan, which anticipated that data recovery would be conducted in a single field season, laid out a field mobilization and mitigation schedule, defined field methods, and developed protocols in the event that human remains were discovered. The document also discussed potential types of analyses that the data might support, including a set of 12 potential research questions that the analyses might address. These questions, which were contingent upon the recovery of appropriate data sets, were as follows:

(1) What are the interrelationships between the archaeological, archival, and oral history records of Castle Hill (cf. Dilliplane 1983; Leone 1988:29)?

(2) Are archaeological deposits from the earliest (Tlingit) use of *Noow Tlein* (Castle Hill) preserved? Are datable materials present? What was the nature and antiquity of the Tlingit occupation of *Noow Tlein* prior to European contact? Few details of *Noow Tlein* are known.

(3) What are the spatial relationships among artifacts and clusters of artifacts? Are patterns present which suggest specific activity areas that can be related to episodes of Tlingit or Russian use of the site?

(4) What is the pattern of material culture discard and curation at Castle Hill (cf. South 1977:195), and how does this pattern compare or contrast with other sites in Russian-America? For example, it may be possible to compare patterns of discard between Russian-American Company employees of management status (*i.e.*, Castle Hill) with those of working class employees in outposts such as Kolmakovskiy Redoubt (Oswalt 1980). The Castle Hill assemblage may also be compared with Russian-American assemblages from manufacturing sites such as the Middle Bay Brick-kiln in Kodiak (Dilliplane 1980; 1981), institutional sites such as the Russian hospital in Sitka (Blee 1986), or with local assemblages related to activities of the clergy such as the Bishop's House (Shinkwin 1977).

(5) Is it possible, from the pattern of material culture discard discussed above, to define measures of socio-economic status (cf. South 1988:25) or behavior (Dilliplane 1985)? For example, studies have shown that the ratio of tea cups to flat ware is a correlate of socioeconomic status (Spencer-Wood 1987:16). It may be possible to define an archaeological measure of class distinctions by comparing the Castle Hill assemblage with assemblages from other sites in Russian-America, including those cited above.

(6) What Russian-American industries are represented by the Castle Hill artifacts? What types of items were manufactured locally or in the Russian-American colonies, as contrasted with imported items?

(7) How were materials modified for re-use? For example, preliminary excavations at Castle Hill revealed a glass fragment which had been intentionally retouched through the removal of pressure flakes. Prior to the Russian occupation of Castle Hill, its Tlingit inhabitants may have adapted broken trade items for re-use. A scarcity of supplies during the early Russian occupation of Castle Hill may also have necessitated the creative re-use or repair of some items which would have been discarded if replacements had been readily available.

(8) What are the patterns of subsistence and food preparation, determined through the study of fauna, flora, and kitchenwares? For example, butchering patterns have been studied as markers of ethnicity on historic sites (Williams and Cohen-Williams 1997).

(9) What are the consumer choices in material items used at Castle Hill? For example, Deagan (1988:9) has examined consumer choice on historical sites by comparing the archaeological record with locally available materials on inventory lists.

(10) What are the construction details of the earlier Castle Hill structures, including those of Tlingit as well as Russian design? For example, it may be possible to date and locate some of the cellars that are known (from archival records) to have been associated with Russian buildings that pre-dated the Castle.

(11) What are the formational processes that effect site deposits (or how the artifacts got to be where they were found) at Castle Hill? What time periods are represented or not represented in the archaeological record at Castle Hill, and why?

(12) How did patterning within the material culture record change through time? A rich but incomplete archival record of Castle Hill, coupled with sparse undisturbed deposits, provides a historic context in which to place materials from disturbed areas of the site. It may be possible to test a hypothesis that "average to below-average quality goods were generally imported to the colonies... [except 1840-1850]... and colonial products consistently registered at below-average standards without exception" (Dilliplane 1990:402-403). An agreement was reached with the Hudson's Bay Company in 1839 to provide supplies to the Russian-American Company. If artifacts from the 1840-1850 period can be isolated, it may be possible to compare these with artifacts from earlier and later periods.

Because the recovery plan was founded largely on the interpretation of disturbed deposits encountered during the 1995 testing program, it did not fully anticipate the range and complexity of data that were eventually recovered during the 1997 and 1998 field seasons. Consequently, the data set may address a much broader range of research topics than initially proposed (*e.g.*, topics related to facets of industry, technology, trade, and metallurgy). The authors of individual sections of this report have addressed research questions supported by their respective data sets (*i.e.*, ceramics, textiles, fauna, etc.). Individual databases, along with the master catalog, are included on CD in Appendix 4.2.

Public Involvement

In addition to data recovery, site interpretation and public involvement were important components of the Castle Hill research design (McMahan 1997:14-15, 1999:11-13). The site is unique in that many of the elements important in state and local history are contained within a single, confined location. Also, it is often easier for the casual visitor to identify with the archaeology of the recent past that they have read about in history

books, than with prehistoric materials. The Castle Hill Archaeological Project presented a chance to demonstrate site stewardship while interpreting a part of Alaska's history to the public.

Site Interpretation:

Over 200,000 visitors are estimated to have traveled through Sitka annually in 1997 and 1998 based on Chamber of Commerce figures. During the summer of 1997, prior to construction, hundreds (sometimes thousands) of visitors visited the site each day to observe the archaeological excavations. These visitors were primarily cruise ship and ferry passengers, but also included Smithsonian Associates tours, elderhostel groups, school groups, and local visitors (Figure 4.1). The project received fewer visitors during the summer of 1998 due to ongoing construction and closure of portions of the park. Public interest in the project, however, continued to be encouraged by widespread media attention. The ongoing excavations were the subject of local radio broadcasts, National Public Radio broadcasts, and statewide television. To enhance public understanding and appreciation for the site and the project, the Office of History and Archaeology (OHA) sponsored a series of evening public lectures during 1997 and 1998. These lectures, which included both project personnel and visiting scholars, each ended with an update on the progress and latest findings at Castle Hill. Some lectures were video taped and shown on local television throughout the summer season. On request, project update lectures were provided to local organizations. Articles in Sitka's *Daily Sentinel* provided periodic front-page coverage throughout the duration of the project. Major and minor articles also appeared in the *Anchorage Daily News*, the *Juneau Empire* and, through syndication, newspapers throughout Alaska and the United States. In February 1998, the international publication *Islands Magazine* featured an article on the 1997 work at Castle Hill. In July 1998, *Alaska Magazine* published an article on the history and archaeology of Castle Hill based on 1997 findings. This magazine, on sale near the site, was available to visitors during the last half of the 1998 field season. *Alaska Magazine* also published a small article on the Raven's Tail robe fragment from Castle Hill in November 1998. In December 1998, the magazine *Alaska Southeasterner* featured lengthy articles on both the 1998 work at Castle Hill and the Raven's Tail robe fragment. A 1999 publication produced by the Federal Highways Administration featured the Castle Hill project as a case study for the use of transportation enhancement funds (NTEC 1999:24-25).

While there are no current plans to interpret the archaeology of Castle Hill to the public through pamphlets and on-site panels (refer Appendix 4.3), the findings continue to attract the attention of scholars. Some artifacts from the collection have been loaned to the Isabel Miller Museum in Sitka for display. Others were displayed in a major exhibition entitled *Unseen Treasures: Imperial Russia and the New World*, which opened at major venues across the United States before closing at the Russian State Historical Museum in Red Square, Moscow in September 2001 (McMahan 1999b). Concurrent with the Russian exhibition, other Castle Hill artifacts were part of a major exhibition entitled *Beads Road in the North: Indigenous Trading and Development of Arts and Crafts in the North Pacific Rim*, at the Japanese National Museum of Ethnology, Osaka, during the fall-winter of 2001.

Figure 4.1. Archaeologist Ty Dilliplane examines an artifact with a visitor while Sitka volunteers excavate in the background.

Public Participation:

From its inception, the Castle Hill Archaeological Project was undertaken with public participation in mind. Archaeological projects in urban settings always draw visitors interested in procedures and findings. A broad cross-section of Sitka organizations and individuals provided support and/or endorsements throughout the project. These included the Alaska Native Brotherhood and Sisterhood, the Alaska State Parks (Sitka) Advisory Committee, the City of Sitka, the National Park Service, the Sheldon Jackson College and Museum, the Sitka Historical Society, the Sitka Tribe of Alaska, the University of Alaska Southeast (Sitka Campus), and the U.S. Forest Service. A number of local volunteers participated both in 1997 and 1998. This enabled first hand involvement of the community, and provided an opportunity for OHA to teach site stewardship and basic principles of archaeology. Experienced non-local archaeologists and historians also participated in the excavations on a volunteer basis, reducing the cost of fieldwork. The professional staff of Sitka National Historic Park not only volunteered on the site, but collaborated in the construction of a temporary exhibit at the NPS visitor center. During both 1997 and 1998, OHA collaborated with the University of Alaska Southeast to provide an archaeological field school. The project benefited by acquiring additional labor and inexpensive housing near the site for project personnel.

During the laboratory phase of the Castle Hill Archaeological Project, continuing opportunities were made available to students and scholars. A cooperative relationship between OHA and the University of Alaska Anchorage allowed graduate students to become involved with aspects of analysis outside the current reporting scenario. By prior arrangement, portions of the collection were also examined by visiting Japanese, Russian, and American scholars. This sharing of information contributed substantially to our understanding of activities at the site.

CHAPTER 5: METHODS

J. David McMahan

Field Methods

A general field strategy, along with excavation protocols, was established in the 1997 recovery plan (McMahan 1997:17-19). The complexity of the Castle Hill cultural deposits, which was not apparent until data recovery was well underway, presented challenging methodological problems. These were exasperated by torrential late summer rains, a long history of recurring construction disturbances, periodic vandalism, and steep topography over much of the site. Consequently, the original methods were modified and supplemented to accommodate the realities of fieldwork (Figure 5.1).

Mapping and Provenience

A metric grid facilitated the mapping of surface materials, features, surface tests, and block excavations. During the 1995 testing program, archaeologists established a baseline across the long-axis of the grassy park on top of the hill. With an optical transit, a primary datum monument was established at the south end of the baseline (at a sidewalk drain) and assigned arbitrary x and y coordinates (N100/E100). A secondary datum (N28/E100) was established at the north end of the baseline (at the opposing sidewalk drain). From points along this baseline, the grid was expanded as needed. During the 1995 field season, arbitrary but internally consistent elevations (z coordinates) were used to record features and excavation units in the absence of known AMSL (above mean sea level) elevations. During the 1997 and 1998 field seasons, when excavations focused on a terrace near the base of the hill, actual AMSL elevations were calculated by means of a transit traverse from a cadastral survey monument. Vertical reference monuments, which were related to AMSL and recorded in a field log, were established as needed during expansion of the excavation.

The basic excavation unit, against which all artifacts and features were plotted, was a one-meter by one-meter square. In most cases, particularly where sediments were deep, two contiguous units were opened simultaneously to facilitate movement within the pits. Artifacts were bagged according to unit (northing/easting) and level. At the excavator's or supervisor's discretion, more notable artifacts were assigned individual 3-point provenience and bagged separately. When expanding block excavations, the excavation of new units was sequenced to best produce continuous stratigraphic profiles.

Stratigraphic Control:

Most units excavated in 1995 penetrated deep, disturbed sediments on top of the hill. Because natural stratigraphy at the site had not yet been defined, soil was removed in arbitrary 10cm levels. During initial work near the base of the hill in 1997, the use of arbitrary 10cm levels continued until a better understanding of natural stratigraphic units was achieved. Subsequent fieldwork in 1997 and 1998 utilized natural stratigraphic layers where possible, but reverted to arbitrary 10cm levels when these could not be discerned. In general, stratigraphy at the site was discontinuous and complicated due to recurring episodes of construction and disturbance. In the field, stratigraphic sequences were established for each individual unit with an effort at consistency with adjacent units. Stratigraphic units across portions of the site that were especially complex, as where building ruins overlay or overlap each other, were correlated from notes and drawings during laboratory analysis.

Figure 5.1. An elaborate tarp system was constructed to protect the site from heavy rainfall during excavation.

Recovery Techniques:

In 1995, test pits were excavated using a combination of shovel and trowel techniques with the objective of identifying high-potential areas. Testing was generally initiated by trowel, with the option of using a shovel if extensively disturbed deposits were encountered. Testing was supplemented by the use of a 4-inch-diameter bucket auger and a 1-inch-diameter soil tube on a judgmental basis. During 1997 and 1998, block excavations were carried out almost exclusively by trowel. Testing and construction monitoring on the slopes and summit of the hill in 1997-98 made extensive use of shovels for identification purposes. Trowels were used when features or intact deposits were encountered. In 1997, a small Kubota backhoe was rented to facilitate deep testing along the upper trail. This

tractor, which fit within the trail footprint, was used to remove disturbed overburden so that underlying deposits could be evaluated.

The sediment removed from test pits and block excavations was systematically screened through 1/4 in. mesh to objectify and maximize data recovery. The use of smaller 1/8 in. mesh, while shown to recover 50% more than 1/4 in. mesh in tests (Reed 1994), was considered unfeasible at Castle Hill due to damp soil conditions and the volume of sediment to be moved. At the discretion of the field supervisor, 1/8 in. mesh was used in some contexts (*e.g.*, intact cultural features) and noted as such. To establish baseline information on the adequacy of recovery, particularly with regard to small beads and similar items, sterile sediment samples were routinely collected for flotation. In the laboratory, the samples were processed with tap water by use of a Flote-tech system. Light (flotable) fractions were collected in .325mm mesh, while heavy fractions were collected in 1mm mesh. Sorting of heavy fractions in the laboratory suggested no significant loss of diagnostic artifacts, including beads, in the ¼ in. screens. Artifacts from the samples, along with charcoal, faunal, and bulk samples, were recorded and packaged for further analysis.

Other specialized field methods were used as appropriate. For example, a four-inch-diameter bucket auger was used to supplement test excavations when a broader sample of the deposits was desirable. During all field seasons, particularly in block excavations, a one-inch-diameter tube-type soil sampler was used routinely for subsurface sampling. A metal detector was also used judgmentally to anticipate the location and/or verification of metal artifacts in excavation units. This was complicated by the heavy volume of metal artifacts in the soil. All artifacts, as well as samples such as charcoal, faunal and bulk samples, were recorded in three-dimensions.

Laboratory Methods

Both the 1997 and 1998 field seasons far exceeded expectations in terms of site complexity and artifact yield. Although an artifact count was not available at the close of the 1998 field season, freight records indicate that more than two tons of artifacts were shipped to Anchorage for analysis. The majority (about ¾ by weight) were recovered in 1998, and represented more than three times the quantity anticipated on the basis of 1997 findings. By the completion of cataloging in 1999, more than 300,000 artifacts had been recorded. Many of these were organic materials that required specialized treatment.

General Laboratory Methods and Protocols:

During 1997 and 1998 field seasons, Mount Edgecumbe High School provided a large science laboratory for project use (Figure 5.2). This facility was indispensable for the preliminary conservation of finds, and the staging of materials for shipment to Anchorage. While an effort was made to catalog some finds in Sitka, most cataloging occurred after the collection was shipped to Anchorage. In anticipation that the collection would eventually be accessioned to the University of Alaska Museum, Fairbanks (see Curation, below), accession numbers were acquired from the UAF museum in 1995, 1997, and 1998 (UA96.050; UA97.094; and UA98.052). For each accession, OHA assigned consecutive catalog numbers to artifacts. These were initially handwritten in a notebook, then entered into a computerized database along with basic provenience and descriptive information. During cataloging, artifacts were lightly cleaned and/or set aside for conservation as appropriate. Organic materials such as textiles, hairs, fibers, and wood were generally

Figure 5.2. Mount Edgecumbe High School provided a large science laboratory for the preliminary sorting, conservation, and analysis of artifacts in Sitka.

sealed in plastic bags and placed in a chest freezer to await evaluation and conservation. Numbers were written directly on durable artifacts unless prohibited by size or fragility. In some instances, a single number was assigned to a group of artifacts, such as glass shards, bagged together from the same provenience. In these instances, a single number was written on the bag and an artifact count recorded in the database (refer Appendix 4.2). During cataloging, artifacts from certain functional or diagnostic categories were set aside for more detailed analysis. These included ceramics with manufacturer's marks, tobacco pipes, currency, lead seals, beads, buttons, weapons and munitions, hardware, and Native American artifacts.

It became apparent during cataloging that, while SHPO staff and professional colleagues advocated complete analysis, it would be ultimately necessary to devise a sampling strategy (refer Appendix 4.3). Under this plan, detailed documentation was conducted for the above categories (*i.e.*, ceramics with manufacturer's marks, etc.). For the bulk of the collection (glass, unmarked ceramics, iron, textiles, etc.), 10 of the 162 one-meter-square units excavated during 1997-98 were selected for quantitative analysis. Castle Hill lab staff, who were assigned various analyses based on experience and interest, collaborated in the selection of units with the goal of: (1) obtaining representative samples the four identified building ruins and associated trash deposits, and (2) producing a viable sample of the material of primary interest to each team member (*i.e.*, ceramics, textiles, fauna, etc.). In practice, more than 10 units were included in the analysis of some categories (for example, textiles).

Conservation:

An essential step in processing any artifact assemblage is the application of cleaning and conservation treatments. Treatments were applied by project staff under the guidance of, or through consultation with professional conservators. Brook Bowman, former State Conservator at the Alaska State Museum (ASM), provided invaluable assistance in both the field and laboratory. Dr. C. Wayne Smith, director of the Archaeological Preservation Research Laboratory at Texas A&M University, provided training in the use of polymers for the treatment of some organic artifacts (Figure 5.3). Specific conservation problems were also discussed with individuals representing the Research and Design section of the Dow Corning Corporation, the Smithsonian Institution, the U.S. National Park Service, the McCrone Research Institute, and Parks Canada Heritage Resources Section.

Due to the fragile nature of many of the artifacts, and the long interval between excavation and final disposition, treatment to stabilize some items began at Sitka. The use of the science laboratory at Mount Edgecumbe High School (MEHS) proved important for the evaluation, treatment, and staging of artifacts. At MEHS materials were soaked in distilled water and cleaned or treated as necessary to prevent degradation. Electrolysis cells were set up to process ferrous metals, and in 1998 vacuum chambers were set up for polymer passivation (silicone) treatment of some items. In a few instances, chemical treatments were used in the field to facilitate preservation in place, or in the removal of extremely fragile organic items such as basketry. When structural timbers were exposed in 1998, samples were taken. While there were no plans to collect remaining portions of the timbers, it was desirable to leave them in place for mapping and interpretation until the close of the project. To retard drying and cracking, multiple coats of a low-viscosity acryloid B-72 solution were sprayed on the timbers. In another case, a decision was made to rebury the excavated base of a brick metalworkers' kiln so that it could be re-excavated and interpreted at a later time. The design engineers shifted the trail footprint slightly to accommodate *in situ* preservation of the feature.

After consultation with a research and design chemist at the Dow Corning Corporation, the kiln was sprayed with a prescribed Dow Corning polymer resin. This treatment was problematic, however, in that it formed a white residue on the bricks that had to be removed mechanically. In other incidences, fragile materials such as basketry were dehydrated with acetone prior to removal. When the Raven's Tail robe fragment was discovered in 1998, the item was deemed significant enough that Alaska State Museum staff (Brook Bowman, Janis Criswell, and Steve Henrikson) traveled to Sitka and personally participated in its recovery and initial treatment. The robe fragment, along with an intact spruce root basket, was transported to the Alaska State Museum for professional conservation.

The majority of the collection was assessed and treated in Anchorage (Figure 5.4), where stabilization of the collection was assigned a high priority in the course of overall project completion. All treatments were recorded in a laboratory log for eventual entry into a computerized database. Organic items, with the exception of those treated in Sitka, were kept moist (or in their original condition) in sealed containers during shipment. In Anchorage, these containers were stored in chest freezers until the items could be assessed and treated. Because ventilated laboratory space for chemical treatments could not be secured until April 2000, the freeze drying of some poorly sealed items occurred

Figure 5.3. Dave McMahan prepares materials for silicone treatment at Texas A&M's Archaeological Preservation Research Laboratory. Treated materials included rope and a shoe .

before treatment. Durable items such as pottery, glass, and lithics were typically washed with tap water and air-dried during cataloging. Treatments of particular material types are discussed below. Specific treatment schedules are reported in Appendix 5.1.

Textiles, Feathers, Hairs and Fibers:

Following consultation with the ASM conservator, no chemical treatments were prescribed for the vast majority of items in these categories. They were typically soaked and cleaned in distilled water, with a small quantity of free rinsing conservator's detergent (Orvus paste) if necessary. Textiles were spread flat to dry, then placed in customized acid-free containers. Many very small textile fragments, along with feathers, hairs, and fibers, were simply cleaned, dried, and repackaged according to provenience.

Wood:

Recovered wooden items included implement handles, carved items, stoppers, barrel staves, shoe parts, and timber samples. Most items were small enough to be suitable for a variety of chemical treatments. Typically, these items were cleaned in tap water followed by a distilled water bath. They were then frozen in air-tight containers until a chemical treatment could be applied. The polymer passivation (silicone impregnation) process was chosen for most items, and works particularly well with small wooden objects. This technique was developed for conservation use by the Texas A & M University

Figure 5.4. The microscopy station at one of four sequential Anchorage laboratories used to process the two tons of Castle Hill artifacts.

Archaeological Preservation Research Laboratory (APRL) and the Dow Corning Corporation (Smith 1997). This technique, which was developed largely for archaeological shipwreck materials, does not require acid-free storage or humidity control. Moreover, the treatment can be accomplished much faster than with conventional bulking agents such as polyethylene glycol. A discussion of advantages and disadvantages of polymer passivation is beyond the scope of this paper, but specific procedures are described in Appendix 5.1.

Ivory and Bone:

Ivory and bone artifacts were typically wet or moist when removed from the soil. Consequently, these materials were dried very slowly to prevent cracking. Soon after removal from the ground, ivory and bone artifacts were cleaned with distilled water, placed in individual airtight bags, and refrigerated. The bags were monitored on a daily basis to remove any condensation which had formed with an absorbent towel. This was continued until no condensation appeared on the insides of the bags. Unworked bone was simply cleaned with tap water and allowed to air dry.

Basketry:

Recovered basketry included examples made of spruce-root, grass, and cedar bark. Most fragments were in very poor condition at the time of discovery. They were generally wet or moist when uncovered, and extremely fragile. Because their excavation was very tedious and time consuming, it was necessary to keep the specimens moist with a spray bottle until their removal. Larger specimens were removed by sliding thin metal sheets (from the local newspaper office) underneath. The specimens, along with soil matrix, were then wrapped with plastic and immediately transported to the MEHS field

lab. In the field lab, specimens were cleaned and soaked in distilled water. Residues from cleaning, along with samples of soil matrix, were saved in the event that they might produce insights as to the contents of the vessel. One vessel produced masses of salmonberry seeds. Conservation of most of the basketry specimens was problematic due to poor preservation. Several specimens were treated with polymer passivation with mixed results (Appendix 5.1). A relatively complete spruce root basket, believed to be a cooking vessel, was transported to the Alaska State Museum for treatment by a combination of PEG impregnation and freeze-drying. Favorable results have been reported for similarly treated specimens.

Leather:

Most recovered leather specimens appeared to represent materials from the repair and manufacture of shoes. These materials were in varying states of condition at the time of recovery. Fragile specimens were recovered with the surrounding soil matrix similar to the basketry described above, then wrapped in plastic and foil. Most leather specimens were simply placed in plastic bags to retain moisture. They were then stored in a refrigerator in Sitka. In Anchorage, the specimens were cleaned with distilled water, placed in clean airtight bags, and stored in a freezer pending conservation treatment. The specimens were then treated by the polymer passivation method following the procedures described in Appendix 5.1.

Metals:

Recovered metals included iron, lead, copper or copper alloys, and composite materials. Also recovered were a few pewter artifacts, a small piece of scrap gold, and U.S. coins of silver and nickel. The primary method of treatment for iron artifacts, which were badly corroded at the time of recovery, was electrolytic reduction. Some iron artifacts were treated by electrolysis in the MEHS field lab. Electrolysis was then assigned a low priority in the Anchorage laboratory because a ventilated workspace was not available until April 2000, and the treatment of organic materials was considered to be more critical. Through a cooperative agreement with Marc Haughaboo, a UAA student, electrolysis was continued in Anchorage during the fall-winter of 2001-2002. Cleaning of the metals revealed a wealth of new information on the site's iron assemblage and metalworking activities, but the results of analysis have not yet been incorporated into a report. The specific procedures used for electrolysis of the Castle Hill specimens are described in Appendix 5.1.

In addition to artifacts of ferrous metals, copper and copper alloy artifacts were well represented at the site. While these were in generally good condition, coinage and buttons were often badly corroded or encrusted so that surface details could not be observed. The majority of copper and copper alloy artifacts were simply dry brushed or cleaned with tap water. Some of the more badly corroded specimens were soaked in distilled water and lightly brushed. In a few instances, badly encrusted specimens were cleaned in an ultrasonic cleaner. In these instances, the ultrasonic cleaner was filled with water, and the specimen placed in an inner beaker of distilled water and mild detergent.

Lead artifacts were comprised of lead seals, musket balls, bullet mold residue, and miscellaneous strips. Most were in good condition at the time of recovery, and were simply cleaned in distilled water or dry brushed. One of the lead seals (98.130) was cleaned with 10% hydrochloric acid, however, to expose characters useful in its identification.

CHAPTER 6: RESULTS OF THE INVESTIGATION

J. David McMahan

Introduction

For reporting purposes, the results of data recovery are divided into two discrete sections based on spatial and methodological differences. These are: (1) the top and southeast slope of the Hill; and (2) the natural terrace at the base of the southeast side of the hill (Figure 6.1). The 1995 testing program demonstrated that the top and slopes of the hill were largely disturbed, but potentially included small areas of intact deposits. This was confirmed by testing the slopes with a small Kabota backhoe in 1997. Early in the 1997 field season, the discovery of widespread undisturbed cultural deposits on the terrace prompted a change in research methodology towards intensive block excavations within that area. This terrace, interpreted as a workshop area, was the focus of intensive data recovery during both 1997 and 1998. Data recovery on the top and slopes of the hill was postponed, except for continued testing, until the beginning of construction in 1998. During construction, a cooperative relationship between the contractor and archaeologists allowed for the use of heavy equipment to remove asphalt, buried construction debris, and modern overburden from otherwise inaccessible deposits on top of the hill. Data recovery on the top and slopes of the hill entailed archaeological monitoring of construction, and the hand excavation of scattered features and deposits as they were exposed by equipment. The results of each of the two areas are reported below.

Top and southeast slope of Castle Hill

Archaeological work on the top and slopes of Castle Hill was initiated with the 1995 testing program to locate and evaluate buried deposits, and to recommend a research strategy. This program, which entailed subsurface testing of the proposed construction footprint, focused primarily on the flat hilltop within the existing stone enclosure. The need to excavate larger pits to penetrate a thick mantle of disturbed soil in this area precluded the excavation of a more widespread array of smaller pits, as would have been more preferable for planning. As expected, archaeological deposits on the top and slopes of the hill were found to be largely disturbed. The discovery of a possible Russian period "floor" deposit just outside the stone enclosure on the northeast side of the hill, however, suggested that other scattered deposits of intact materials might be present. Due to a thick overburden of buried construction debris, such as cemented boulders and pipe, it was anticipated that the use of heavy equipment would be necessary for testing and data recovery in some areas. For this reason, archaeological work on the top and slopes of the hill was planned to coincide with the contractor's construction schedule and entered into the recovery plan:

> (2) **Mobilization 2:** Clearance of a corridor along the existing trail will allow the construction contractor to move equipment to the top of the hill, and inside the stone parapet. The construction contractor, while monitored by archaeologists, will first remove the concrete sidewalk from inside the parapet. Archaeologists will then conduct data recovery excavations on top of the hill, while the construction contractor works on the accessible pathway corridor. This work will also be monitored by archaeologists. The construction contractor will resume work on top of the hill after archaeologists have cleared the area (McMahan 1996:17).

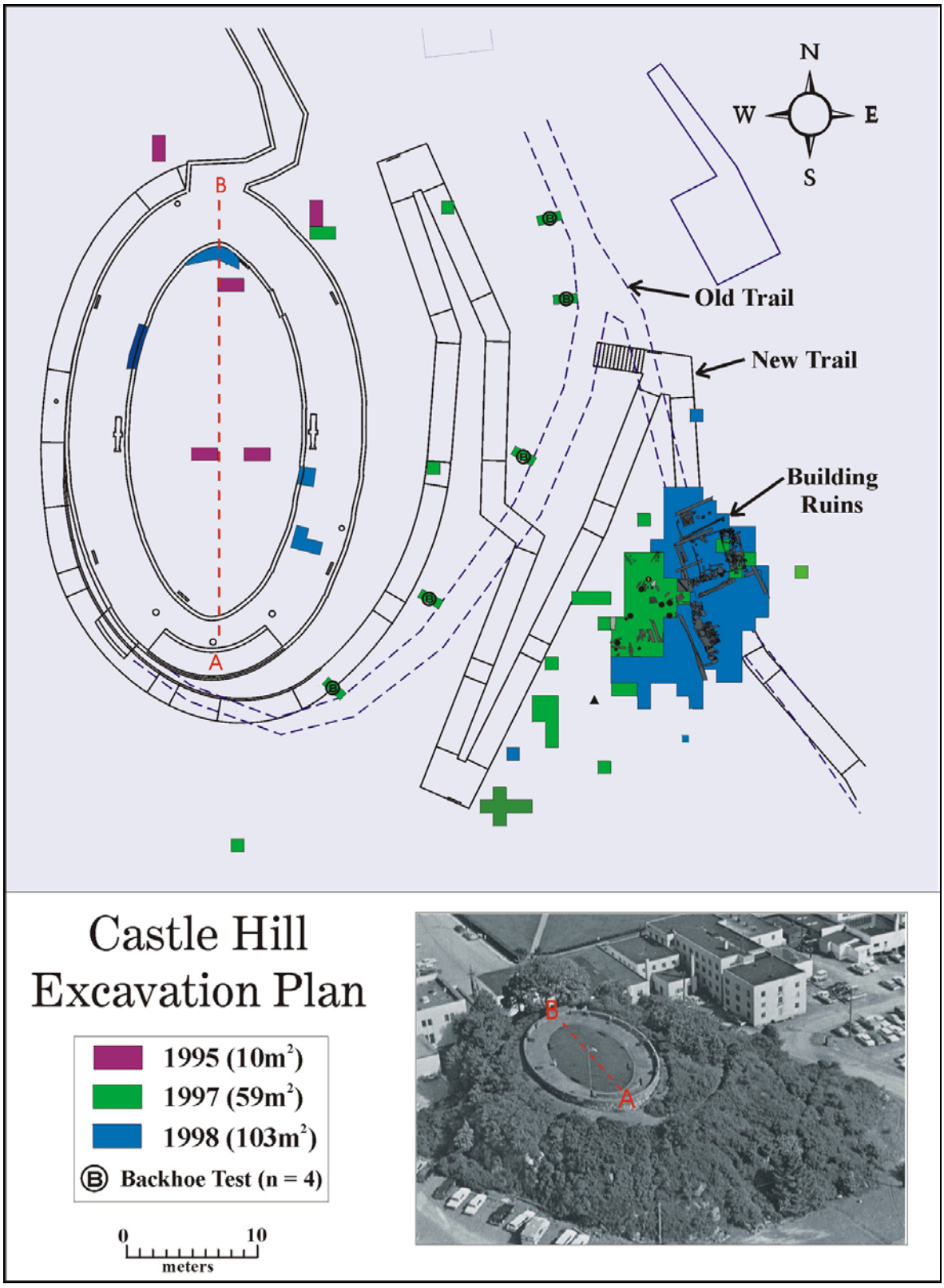

Figure 6.1. Castle Hill excavation plan.

In preparation for clearing the existing trail to the top of the hill, a series of shovel and trowel tests were excavated. These were supplemented by a series of backhoe tests along the trail in July 1997. A small Kubota backhoe, which was small enough to fit within the existing foot trail, was rented locally and operated by an OHA team member. The tractor successfully removed disturbed overburden along the upper side of the trail so that underlying deposits could be evaluated. Shovel and backhoe testing confirmed that the slopes of the hill were largely disturbed, but that isolated cultural features or artifact-bearing deposits were potentially present. One of the shovel tests encountered a trash pit, on the slopes of the hill, that appears to date from the late 19th century. In the spring of 1998, when a clearance was granted for construction to begin on the top of the hill, construction was carefully monitored by archaeologists. Monitoring continued, concurrent with intensive block excavations near the base of the hill, during trail construction throughout the summer of 1998. The removal of massive amounts of soil during construction resulted in the discovery of a small but interesting array of cultural features.

Prehistoric Midden Deposits:

While it was known from the outset of the project that four Kiks.ádi Tlingit clan houses were present at *Noow Tlein* (Castle Hill), it was considered improbable that intact features or deposits would have survived the recurring episodes of disturbance during the Russian and American periods. During the 1995 testing program, however, shell-bearing soils were encountered to a depth of 40-50cm in a four-inch-wide auger test at the base of the north side of the hill. Because the test hole was outside the project footprint, no additional testing was conducted. It could not be ascertained from the auger test if this spatially restricted midden was *in situ* or redeposited, but its discovery suggested the possibility of other such deposits.

During the monitoring of trail construction in May 1998, a more substantial organic-enriched shell midden was discovered on the eastern slope of the hill. Construction was immediately halted in this area, and the midden was further investigated with shovels and trowels. The midden deposit was spatially restricted to an area roughly 10 m x 6 m, and extended to a maximum depth of about 1.0 m below the surface. Three strata were ultimately identified: a 30 cm thick shell lens (Level 1); a deeper shell lens extending to 90 cm below the surface; and a dark, greasy organic lens extending to 1.0 m below the surface. The shell lenses, which also included preserved faunal remains, were relatively homogeneous in texture. No artifacts were discovered, despite extensive screening through ¼ inch mesh, but bulk sediment samples were collected for laboratory analysis. Eleven bulk samples were extracted from the three levels, with sample sizes ranging from approximately 0.75-3.5 liters.

In the Anchorage laboratory, the samples were processed in a Flote-tech water flotation device to separate light fraction materials (charcoal and other flotables) from a heavy fraction comprised of mineral matter, shell, and other non-flotables. Collection mesh sizes were 0.325 mm for the light fractions and 1.0 mm for the heavy fractions. The only recovered artifact, from one of the heavy fractions, was a small fragment of worked bone that is possibly from a composite fishhook. More importantly, charcoal for radiometric dating was extracted from light fractions of each of the three stratigraphic units.

Conventional, extended-count C-14 dating analyses by Beta Analytic, Inc. produced the following results:

OHA Sample 1 (FS 98-5)	Beta-125912	Base of Midden	1100 +/- 60 BP
OHA Sample 2 (FS 98-9)	Beta-125913	80 cm BS	500 +/- 60 BP
OHA Sample 3 (FS 98-1)	Beta-125914	Top of Midden	660 +/- 50 BP

Intercepts of the above dates with a calibration curve suggest probable calendar dates of AD 990 (base of midden); AD 1440 (80 cm below surface); and AD 1310, AD 1365, or AD 1375 (top of midden). These dates confirm oral tradition of a long Tlingit occupation at the site prior to the establishment of a Russian settlement in 1804. Oral history states that four Kiks.ádi clan houses were located on the hill at *Noow Tlein* (Andrews 1960:24). Andrew Hope (1967) of the Sitka Kiks.ádi's Point House, in relating the story an elder told to him, states that there were four communal houses on top of the hill and a fifth house on a natural bench toward Indian River. The "bench toward Indian River" is in the approximate location of the discovered midden deposit on the east side of the hill.

Because the dated midden samples contain faunal remains, they are important for the subsistence and environmental data they can provide. Shells from seven of the bulk samples were analyzed by Nora Foster, a shellfish expert at the University of Alaska Museum, to determine taxonomic representation. The tabulated results are presented in Appendix 6.1.

Historic Features and Deposits:

Eleven features, excluding drain pipes and other modern intrusions, were recorded during construction monitoring. These included postmolds and other pit features. Based on artifact associations, it was possible to assign four features to Russian period events or structures and two features to the late 19th century. The other five features were of indeterminate origin, but probably relate to either a prehistoric or early historic use of the hill. Original field numbers were retained for the feature descriptions which follow. Under this nomenclature, "98-5-A" refers to the 1998 field season, unit (sector) 5 on top of the hill, and Feature A within Unit 5. During construction of the upper trail switchback on the east side of the hill, in May 1998, five pit features were identified in profile along the upper edge of the equipment cut. The designator "98-UT-3" refers, for example, to the 1998 field season, upper trail construction, Feature 3. Two modern features are worth note. While removing the sidewalk from on top of the hill, in 1998, workers recovered a capped copper pipe that had been buried as a "time capsule" during 1966-67 construction. The pipe contained engineering plans for the park. Of similar note was a bottle, recovered during demolition of the stone wall, that contained a note with the names of the original 1966-67 workers.

Feature 98-1-A:

This feature consisted of a circular postmold with a diameter of 15 cm which was discovered at the base of disturbed fill, at the interface of sterile subsoil. It extended into the sterile subsoil 15 cm vertically. Because the postmold contained no artifacts, it could not be cross-dated. However, much of the disturbed fill on top of the hill is believed to have been deposited during construction of the agricultural research station in 1898. The postmold, therefore, is probably prehistoric or Russian in origin.

Feature 98-1-B:

This feature, which was circular with a conical cross-section, measured 26 cm in diameter and 26 cm deep. Like the previous pit feature, it was discovered at the interface of disturbed fill and sterile subsoil. The feature contained no artifacts, thus could not be dated with certainty. However, much of the disturbed fill on top of the hill is believed to have been deposited during construction of the agricultural research station in 1898. This feature, therefore, is probably prehistoric or Russian in origin.

Feature 98-1-C:

This feature was a square postmold which measured 7 cm in diameter. Discovered at the interface of disturbed fill with sterile subsoil, it extended 25 cm below surface at an angle. The feature contained no artifacts, thus could not be dated with certainty. However, much of the disturbed fill on top of the hill is believed to have been deposited during construction of the agricultural research station in 1898. Based on its square form and probable pre-1898 origin, the feature was most likely associated with the Russian occupation of the site.

Feature 98-1-D:

This large circular pit feature, which extended across units 98-1 and 98-5, exhibited vertical walls and a flat bottom. It measured 95 cm in diameter and extended into sterile sediments to a depth of 42 cm. The feature was discovered at the base of disturbed fill, at the interface of sterile subsoil, during construction. It had been filled with large stones, and included a late 19th century molded fire brick with the stamp "E." Recovered artifacts included a single annular ware ceramic sherd, window glass sherds, and a glass bead. Based on artifact associations, the pit is believed to date from the American period.

Feature 98-2:

This large brick fireplace/hearth feature, discovered during construction, was located partially beneath the sidewalk at the north end of the hilltop. Construction was halted, and a 1m x 2 m excavation unit (98-2) was opened over the feature. The feature, which was only 20 cm in depth, was completely removed through archaeological excavation. This revealed that the bricks were not articulated and that the feature had been disturbed by later activities. However, it is believed to have been roughly in its original location due to the presence of subsurface reddening, ash buildup, and soil burning associated with long-term use. Artifacts from the feature, including glass, ceramics, and nails, were all burned and covered by slag. Also associated with the feature were clinkers, charcoal, and fire-broken rocks. No chronology could be established on the basis of the nondescript ceramics and glass. An analysis of the hundreds of nails from the feature, if undertaken, should readily suggest a temporal framework.

Feature 98-3:

A 5-8 cm thick lens of intact organic-enriched midden, including wood chips and forest debris, was discovered directly on top of sterile subsoil. The deposit was roughly semicircular, with irregular dimensions of 70 cm x 65 cm. Very early 19th century artifacts were recovered, including ceramic and glass sherds, a button, beads, and fauna. This

feature, although very limited in size and contents, was believed to represent a primary midden deposit from the historic Tlingit or the earliest Russian occupation of the hill.

Feature 98-5-F:

This feature was comprised of a small circular postmold, with a diameter of 5 cm, that extended 8 cm into subsoil from the fill-subsoil interface. The postmold exhibited a conical cross-section and pointed base. The postmold contained no artifacts, thus could not be dated. However, much of the disturbed fill on top of the hill is believed to have been deposited during construction of the agricultural research station in 1898. The postmold, therefore, is probably prehistoric or Russian in origin.

Feature 98-5-G:

This was a small circular postmold, with a diameter of 17 cm, that extended 14 cm into subsoil from the fill-subsoil interface. The postmold exhibited vertical walls and a conical base. It contained a single ceramic sherd and a fragment of window glass. Much of the disturbed fill on top of the hill is believed to have been deposited during construction of the agricultural research station in 1898. The postmold, therefore, is probably Russian in origin.

Feature 98-UT-1 ("Feature 6"):

This pit feature (termed "feature 6" in the field, and in the catalog) was exposed in profile during construction of the upper trail switchback (Figure 6.2). The top of the pit seemed to originate at the base of a slumped sod mass, although the north wall of the pit was difficult to follow in profile at upper levels. The pit measured 1.5 m in diameter, and extended approximately 80 cm from the base of the slumped sod to the base of the pit. A 50 cm thick lens of loose fill directly beneath the sod may suggest that the actual cultural feature was truncated by a more recent disturbance episode. The lower 40 cm of the pit consisted of cultural deposits in two strata. The upper stratum (Level A) consisted of a mottled fill overlain and underlain by woody lenses that contained spruce limbs. The lower cultural stratum (Level B) consisted of a mucky wet, highly organic soil with abundant wood chips. After the feature was photographed and drawn in profile, it was excavated in levels. Sediments were screened through ¼ inch mesh. Because the soil was too wet for effective dry-screening, buckets of water were hauled up the hill for water-screening of the lower stratum. The pit produced coconut husks and shells, along with worked wood, a bone button, ceramic sherds, flat glass and domestic glass sherds, nails, a gunflint, coal, beads, and a fork. An analysis of the 76 ceramic sherds from the pit, representing a minimum of 14 vessels, produced a mean ceramic date (MCD) of 1820.

Feature 98-UT-2:

Another deep pit feature, characterized by straight tapered walls and a rounded bottom, was discovered in profile about 2-3 m north of Feature 98-UT-1. The top of the pit, which originated at the base of a thick sod mat, measured 1.75 m in diameter but tapered to 0.85 m near the bottom. Its depth was 1.35 m from the base of the sod to the bottom of the pit. The feature was excavated in two levels that were partially separated by a woody lens. Recovered artifacts included domestic glass, beads, fauna, ceramics, iron and copper hardware, brick, and botanical remains. An analysis of the 5 ceramic sherds from the pit,

Figure 6.2. Feature 98-UT-1, dashed line added for clarity.

representing a minimum of 2 vessels, produced an age range of 1800-1830. Bulk sediment samples from the feature have been processed in a Flote-tech flotation system in the laboratory, but the sample fractions have not been analyzed.

Feature 98-UT-3:

Feature 98-UT-3, also visible in profile along the trail cut, was located 2 m north of the previous feature. It appeared to be a large postmold with vertical walls and a flat bottom (Figure 6.3). The point of origin seemed to be within or at the base of the sod mat. The feature measured 50 cm in diameter across the top and extended 1.2 m below the 1998 ground surface. Like the previous features, the lower portion of the postmold intruded gray compacted gravels. The fill was excavated from the feature in three levels, partially due to the discovery of an intrusive wire nail within the upper third of fill. A cannonball (Cat. No. 98-8207) in the bottom of the pit was likely used as a post support. Also recovered were several cut iron nails, a spruce knot, ceramics, and a single sherd of pressed glass. An analysis of the 20 ceramic sherds from the lower two levels of the pit, representing a minimum of 11 vessels, produced a mean ceramic date (MCD) of 1825 and a *Terminus Post Quem* (TPQ) of 1838. A bulk sediment sample was collected from the approximate center of the bisected feature at 70-85 cm below surface. This sample was processed in a Flote-tech flotation system in the laboratory, but the sample fractions have not been analyzed. This large postmold is believed to date from the Russian period.

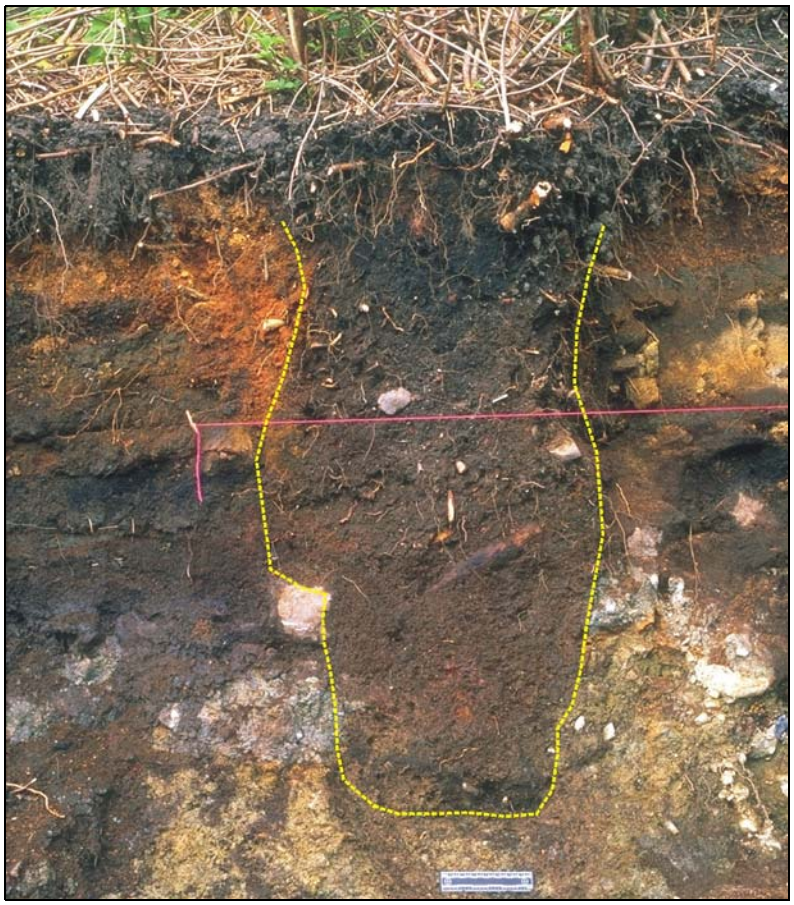

Figure 6.3. Feature 98-UT-3, dashed line added for clarity.

Feature 98-UT-4:

This feature, visible in profile along the upper edge of the trail cut, was a small basin-shaped pit that measured 90 cm across the top and 65 cm deep. The bisected feature produced preserved spruce knots in the upper portion of the pit, suggesting the possibility that a post was present. Two ceramic sherds (from different vessels) have been broadly dated to 1784-1859. A notable artifact, recovered from the base of the feature, was the side panel from a cast brass triptych with remnants of white and blue enamel (Catalog No. 98.69, Figure 6.4). It is identical to an eighteenth century specimen in the Kunz Collection at the Smithsonian Institution, entitled "The Mother of God: Joy of all who Sorrow" (*i.e.*, the Russian Mary)(Ahlborn and Espinola 1991:66). The upper right corner of the Castle Hill specimen was broken off prior to burial, as indicated by a patinated fracture edge. Copper icons and crosses were objects of veneration that, when damaged or worn, had to be disposed of by burial in the ground or in a body of water (Ahlborn and Espinola 1991:9). It is possible that this Castle Hill specimen was disposed of intentionally, following traditional protocols. The work at Castle Hill produced one other triptych panel, the second being an early 19th century specimen from the workshop area.

Figure 6.4. Late 18th century triptych panel (Catalog 98-069) from Feature 98-UT-4.

Feature 98-UT-5:

Feature 98-UT-5, observed in profile along the trail cut, was a probable postmold. It measured 50 cm in diameter at the top, tapering to 20 cm near the rounded base. The feature originated below a gray silt lens at the base of the sod mat. Fill was removed and screened in two levels, producing a few flat and domestic glass sherds, along with a single ceramic sherd of light blue transfer print (circa 1818-1867). A cluster of rocks in the bottom of the feature may have supported the post.

Feature 97-1-A:

This feature, discovered during 1997 shovel testing, was a trash pit on the northeastern slope of the hill. It measured 75 cm in diameter and 39 cm deep, with bowl-shaped sides and a concave base. The pit contained egg shells, paneled glass apothecary bottles, glass tumblers, glass lamp chimneys, butchered bone, coal and "klinker" ash, and burned ceramics. Empty spaces between the artifacts, and fully reconstructable vessels, suggested quick deposition and burial. The artifacts indicate a late 19th century origin, probably circa 1890-1900.

Stratigraphy:

Deposits on the top and slopes of the hill are a culmination of more than 150 years of construction and demolition episodes. For this reason, stratigraphic sections were complex and difficult to correlate spatially. Areas retaining natural *in situ* strata were rare on top of the hill, but were preserved in pockets formed by undulating bedrock. In 1995, a 1x2 m test (N130-132/E107-108) was excavated to a depth of 1.15 m just outside the stone

enclosure on the north side of the hill. This pit revealed modern disturbed sediments to a depth of about 50 cm, overlying an *in situ* stone alignment that may relate to one of the Castle's kitchen gardens. The stones were removed to reveal three underlying cultural levels, the deepest of which (Approx. 0.85-1.0 m below surface) contained distinct Russian period artifacts that may pre-date the 1838 building. This layer rested upon sterile, compact orange volcanic sediments with lenses of finely stratified gray sand or tephra.

Some key events that influenced the stratigraphy of cultural deposits included: demolition of the pre-1804 Tlingit structures; construction and demolition during the Russian occupation that culminated in the burning of the "Castle" in 1894; the transport of massive amounts of fill to the top of the hill in preparation for the construction of the agricultural research station in 1898 (R. N. DeArmond, personal communication); demolition of the research station in the 1950s; and construction of a stone wall and landscaping during 1966-67, with the on-site burial of construction debris. Testing in 1995 indicated that archaeological deposits on top of the hill were largely disturbed, notwithstanding the possibility that scattered deposits of intact materials might be present. This was confirmed during construction monitoring in 1998, when equipment stripped the soil from large areas of the hill. On top of the hill, deposits typically included a layer of topsoil (from 1966-67 landscaping) underlain by a thick mantle of disturbed soil containing pipe, concrete, and other buried construction debris (1898 fill, reworked during 1966-67 landscaping). These layers often rested directly on bedrock, but sometimes revealed preserved natural soils or *in situ* cultural deposits in pocket areas. To complicate matters, the disturbed soils contained abundant artifacts from the early 19th century throughout the 20th century. These mixed assemblages are believed to have been the result of transporting soils from the slopes to the top of the hill during 1898, and again during 1966-67 landscaping.

The eastern slope of the hill was believed to hold slightly better potential for locating *in situ* cultural deposits due to rapid sedimentation and deeper deposits. Here, however, a thick mantle of disturbed soil made it difficult to extend shovel tests to meaningful depths. A series of archaeological backhoe tests along the upper side of the trail in 1997 revealed profiles useful for the general characterization of deposits. These tests revealed disturbed organic-enriched soils, usually to a depth of 0.5-1.0 m, that contained artifacts dating from throughout the 19th and 20th centuries. The disturbed soils sometimes rested directly on bedrock or a thin mineral soil. Thin i*n situ* lenses of shell, overlain and underlain by soils containing historic artifacts, were noted in several locations. They probably derived from discard and colluvial deposition from the top of the hill during the formation of slope soils.

Discussion:

The investigation of the top and slopes of Castle Hill during construction monitoring was, in some respects, a trade-off to be balanced against the meticulous block excavations near the base of the hill. Given the thick mantle of disturbed sediments in this area, coupled with a scarcity of *in situ* cultural deposits and the inability of shovel testing to adequately sample the project footprint in this area, the use of heavy equipment produced otherwise unobtainable information. Cultural deposits on the top and eastern slopes of Castle Hill produced evidence of occupations spanning the last 1000 years. Particularly important were C-14 dates from the prehistoric midden, cited above, which confirm oral tradition of a long

Tlingit occupation at the site. The dates associated with this midden have direct bearing on two of the research questions posed in the Recovery Plan (McMahan 1997:12).

> (1) What are the interrelationships between the archaeological, archival, and oral history records of Castle Hill (cf. Dilliplane 1983; Leone 1988:29), and
>
> (2) Are archaeological deposits from the earliest (Tlingit) use of *Noow Tlein* (Castle Hill) preserved? Are datable materials present? What was the nature and antiquity of the Tlingit occupation of *Noow Tlein* prior to European contact? Few details of *Noow Tlein* are known [McMahan 1997:12].

Ongoing faunal analyses of the prehistoric midden samples, along with the marine shell analysis reported in Appendix 6.1, may address another research question from the Recovery Plan (McMahan 1997:12) and provide a basis for comparison with historic samples:

> (8) What are the patterns of subsistence and food preparation, determined through the study of fauna, flora, and kitchenwares? For example, butchering patterns have been studied as markers of ethnicity on historic sites (Williams and Cohen-Williams 1997) [McMahan 1997:12].

The top and slopes of the hill produced a typologically and temporally diverse artifact assemblage. The majority of the artifacts were recovered from disturbed context, precluding their use in stratigraphic and spatial analyses. A rich archival record and scattered *in situ* deposits, however, provided a historic context in which to interpret these materials. Despite the lack of context, some artifacts could be dated within a relatively tight framework. Examples include ceramic sherds with maker's marks and diagnostic design elements. Other items were dated within a broader framework on the basis of typology, material type, or method of manufacture. In addition to numerous artifacts, work on the top and eastern slope of the hill revealed a small but important array of cultural features. Data from both the features and overall artifact assemblage have bearing on other of the research questions proposed in the Recovery Plan (McMahan 1997:12). For example,

> (3) What are the spatial relationships among artifacts and clusters of artifacts? Are patterns present which suggest specific activity areas that can be related to episodes of Tlingit or Russian use of the site?
>
> (10) What are the construction details of the earlier Castle Hill structures, including those of Tlingit as well as Russian design? For example, it may be possible to date and locate some of the cellars that are known (from archival records) to have been associated with Russian buildings that pre-dated the Castle [McMahan 1997:12].

Midden areas, including the prehistoric Tlingit midden, document discrete refuse disposal areas. Features with unique artifacts, such as the basin-shaped pit that contained a damaged tryptich panel (Feature Feature 98-UT-4), documented specific tasks at the site (*i.e.*, traditional disposal of a venerated religious object). Another task-specific example (Feature 98-UT-3) was a large postmold in which a cannonball had been placed as a post

prop. Other features were determined to be distinctively architectural on the basis of form, association, and inference from the archival record. For example, the large brick fireplace/hearth at the north end of the hill top (Feature 98-2), was determined through artifact analysis and location to have been associated with the 1838 Castle. Another architectural feature consisted of a possible cellar at the northeast side of the hill top. Work in this area in 1995 revealed a possible "cellar floor" comprised of a compact soil layer with distinctive Russian period artifacts at a depth of 0.85-1.0 m. Excavations were expanded in 1997 to produce a cluster of dark green, mid-19th century spirit bottles, believed to confirm the original interpretation. Burned planks overlying this feature may have related to a deck that surrounded the "Castle" when it burned in 1894.

Stratigraphic data from the shovel tests, backhoe tests, and construction monitoring have bearing on questions of formational processes on the top and slopes of the hill:

> (11) What are the formational processes that effect site deposits (or how the artifacts got to be where they were found) at Castle Hill? What time periods are represented or not represented in the archaeological record at Castle Hill, and why? [McMahan 1997:12].

Formational processes were briefly discussed in the Stratigraphy section above, and include natural soil development, episodes of construction and demolition, trash discard, and colluvial deposition.

To a lesser extent, data from the artifacts on the top and east slope of the hill are applicable to questions relating to material culture discard and socio-economic status:

> (4) What is the pattern of material culture discard and curation at Castle Hill (cf. South 1977:195), and how does this pattern compare or contrast with other sites in Russian-America? For example, it may be possible to compare patterns of discard between Russian-American Company employees of management status (*i.e.*, Castle Hill) with those of working class employees in outposts such as Kolmakovskiy Redoubt (Oswalt 1980). The Castle Hill assemblage may also be compared with Russian-American assemblages from manufacturing sites such as the Middle Bay Brick-kiln in Kodiak (Dilliplane 1980; 1981), institutional sites such as the Russian Hospital in Sitka (Blee 1986), or with local assemblages related to activities of the clergy such as the Bishop's House (Shinkwin 1977).
>
> (5) Is it possible, from the pattern of material culture discard discussed above, to define measures of socio-economic status (cf. South 1988:25) or behavior (Dilliplane 1985)? For example, studies have shown that the ratio of tea cups to flat ware is a correlate of socioeconomic status (Spencer-Wood 1987:16). It may be possible to define an archaeological measure of class distinctions by comparing the Castle Hill assemblage with assemblages from other sites in Russian-America, including those cited above.
>
> 12) How did patterning within the material culture record change through time? A rich but incomplete archival record of Castle Hill, coupled with sparse undisturbed deposits, provides a historic context in which to place materials from disturbed areas of the site. It may be possible to test a hypothesis that "average to below-average quality goods were generally imported to the colonies... [except 1840-1850]... and colonial products consistently registered at below-average standards without

> exception" (Dilliplane 1990:402-403). An agreement was reached with the Hudson's Bay Company in 1839 to provide supplies to the Russian-American Company. If artifacts from the 1840-1850 period can be isolated, it may be possible to compare these with artifacts from earlier and later periods [McMahan 1997:12].

Certainly patterns of material culture discard are evidenced by the specialized disposal of the triptych panel, along with trash pits and midden deposits on the slopes of the hill. It is also apparent that certain artifact types, such as the eighteenth century triptych panel and probably other religious items, were curated for many years prior to disposal. In general, however, artifacts from the top and slopes of the hill lack the contextual data required to address these types of questions. For example, it was not generally possible to separate pre-1840 artifacts from later materials. Some aspects of material culture probably changed drastically following the 1839 trade agreement between the Russian-American Company and Hudson's Bay Company. Data from the block excavations at the base of the hill, with good context and finer temporal parameters is more suitable for comparisons with dated assemblages from other Russian-American sites. However, artifact data for the entire site have been applied to some of the above questions in discussions of individual artifact classes in the following chapter.

The Castle Hill Workshop Area

The 1995 testing program began on top of the hill, rather than the slopes, partially because the final trail footprint had not yet been established. At that time, only a single 1 x 1 m test pit was excavated on the natural terrace near the base of the southeast side of the hill, an area ultimately destined as a staging area for construction equipment. The test pit produced a wrought nail and other Russian period artifacts in organic-enriched soil, but was terminated at a depth of 50 cm due to massive boulders and cobbles. When OHA began more intensive data recovery in May of 1997, block excavations were initiated on the terrace. Beneath a shallow disturbed zone, these units began to produce Russian period artifacts in primary context. As excavation continued, it became apparent that most of the terrace was underlain by a deposit containing *in situ* Russian period artifacts. As excavations were extended toward the rocky slopes of the hill to the west, possible refuse deposits were encountered in deep "pocket areas" between bedrock outcrops. As excavations were extended to the east, an organic-enriched "trash deposit" was encountered at a depth of approximately 25-45cm below the ground surface. To the east, this deposit became progressively deeper and produced more organic materials (Figure 6.5). Research and interviews revealed that the bench area had been hand gardened by residents of the Pioneer's Home during the first half of the 20th century, but had not undergone the same degree of disturbance as the top and slopes of the hill. Also, the photographic record suggests that this portion of the hill was devoid of structures after about 1898.

During the 1997 field season, 52 one-meter squares were excavated to an average depth of 0.5 meters. Finds included a double row of large postmolds, axe-cut timbers, and a (partially excavated) brick feature that was tentatively identified as a metal workers' "smithy" or kiln. Recovered artifacts included many finished and unfinished copper items, along with residue from metalworking. Surrounding the "smithy" was a copper ingot and abundant slag, as well as iron bar stock and blacksmithing implements. Items believed to have been manufactured on-site from wood and leather were also identified.

Figure 6.5. Russian period "trash deposit" associated with the workshop area. Note the shoe sole, articulated fish vertebrae, wood chips, and leather scraps.

The importance of the deposit was enhanced by the inclusion of preserved organic items such as textiles, cordage, rope, hair, fur, feathers, leather, worked wood, and exotic botanical materials. This unusual preservation of organic materials is believed to have resulted from slightly elevated soil acidity caused by the large number of axe-cut spruce wood chips in the soil. This was confirmed by two measured soil pH values of 5.4 and 5.9, respectively, for Stratum II (see Stratigraphy, below).

On the basis of field observations and preliminary analysis, it was hypothesized that the natural bench on the east side of the hill was the focus of activities by craftsmen and artisans of the Russian-American Company primarily during the 1830s period. Manufacturing industries in these areas are believed to have included coppersmithing, blacksmithing, the manufacture of shoes and other leather items, and woodworking (including the repair of wooden items). The recovery of several bird feather pen nibs in various states of completion suggests that these may have been made on-site as well. Also noted were areas of lead spatter and sprue, documenting the manufacture of musket balls. By the close of the 1997 field season, block excavations had been extended west to the existing gravel foot trail. While there were no doubts that the deposits extended beneath the trail, it was left intact until a decision could be made regarding additional work at the site.

Based on the extraordinary finds of the 1997 field season, the FHWA and ADOT&PF concurred with the SHPO that additional data recovery should be accomplished prior to construction. To this end, ADOT&PF supplemented the archaeology budget so that excavations could continue in 1998 concurrent with construction. During the 1998 field season, the primary excavation area was extended east beneath the existing and proposed

park trails. This entailed the excavation of 103 square meters in addition to the 59 square meters excavated during 1997.

Beneath and east of the trail, buried ruins of at least four Russian period buildings with associated artifacts were discovered (Figure 6.6). The earliest of these ruins may have originated from buildings depicted in Litke's 1827 illustration of the east side of the hill. It is known from historic photographs that a building of Russian design was standing at this location, albeit in deteriorated condition, into the 1890s. Floor deposits and features suggested that at least two of the building ruins (Buildings 2 and 3) were from workshops, and another (Building 1) was a possible bunkhouse. Interestingly, Khlebnikov (1994:139) mentioned that some of the buildings inside the fort were falling apart in 1830, including "workshops, blacksmith's shops, quarters for the shop workers and a metalwork shop." A fourth ruin (Building 4), largely destroyed by gardening and trail construction, was believed to be the last Russian building to occupy the site. This may have been the bathhouse indicated on the 1867 transfer map and depicted in late 19th century photographs. Also in 1998, the previously identified copper forge was fully excavated, along with workshop floor deposits containing residues and artifacts from metalworking. The intact forge base was chemically treated and re-buried intact at the end of the 1998 field season. Individual features and feature groups in the workshop area are described below. For purposes of discussion, the terrace workshop area is subdivided into two overlapping loci roughly bisected by the foot trail. These are comprised of an organic-enriched historic trash deposit (with postmolds and disarticulated timbers) generally west of the trail, and a cluster of building ruins beneath and mostly east of the trail. These loci roughly correspond to the areas that were excavated in 1997 and 1998, respectively.

Trash Deposit Area (1997 Excavations):

Postmolds:

Eleven distinct postmolds, some with post remnants, were discovered in the historic trash deposit or midden area in 1997. They clustered within two diameter ranges, and most originated at the base of the modern disturbance zone. No distinct structural footprints were discernable on the basis of postmolds. It is possible, given the close proximity to workshop ruins, that they represent supports for open structures. It is also conceivable, albeit less likely, that these represent earlier structures whose timbers were reused during construction of the buildings to the east.

Timbers:

Timbers discovered in the trash deposit area west of the trail appeared to be isolated structural members or disarticulated sections of buildings that were not in primary context. It is possible that they were associated with earlier, dismantled or collapsed buildings, or that they relate to the building ruins to the east. In some respects, the area west of the trail had the appearance of a work yard where woodworking and other tasks were performed. A large timber uncovered in this area was riddled with axe scars from having been used as a chopping block.

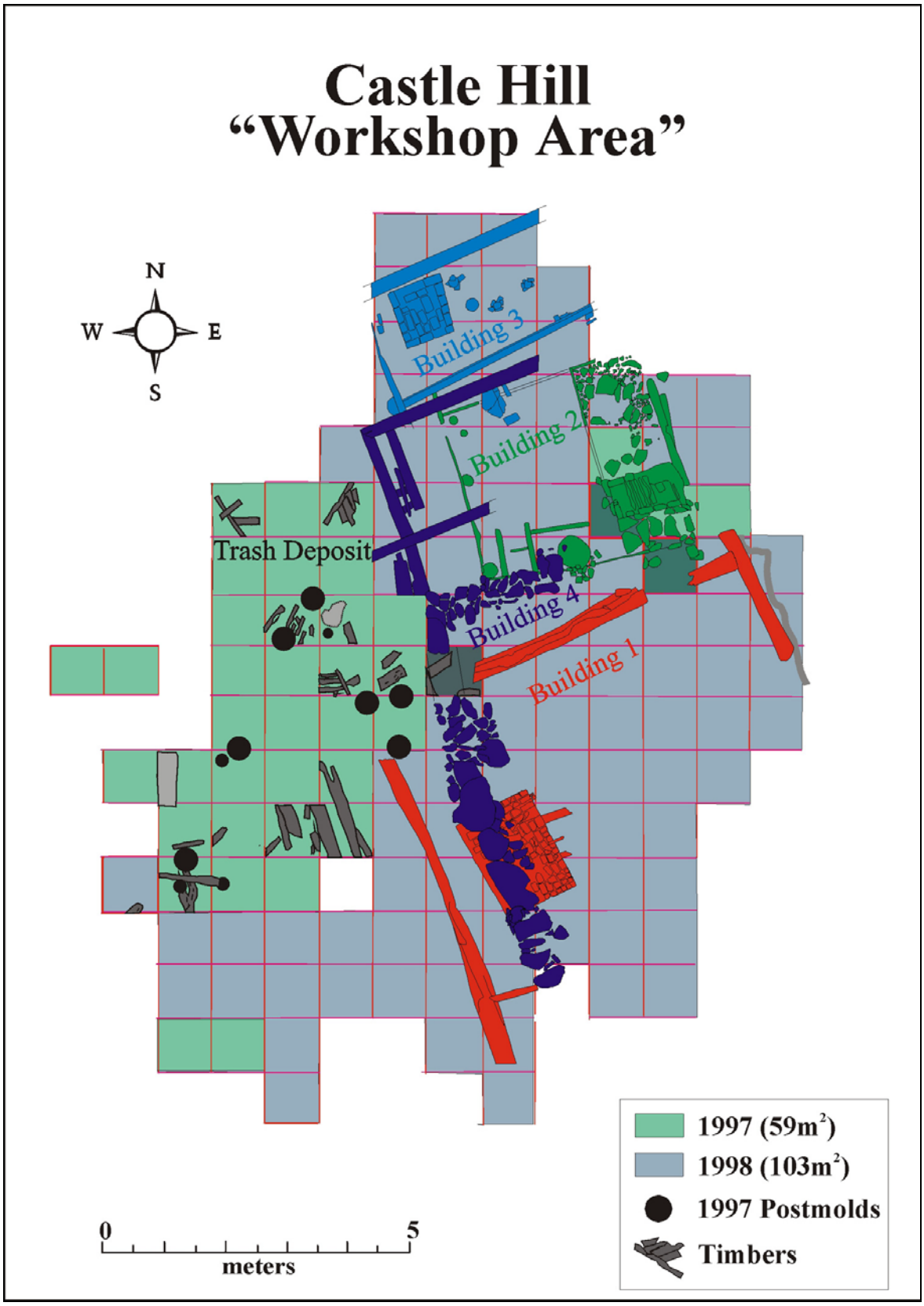

Figure 6.6. Plan view of building footprints in the workshop area.

Building Ruins (1998 Excavations):

Building 1:

The Building 1 ruin, oriented northwest-southeast was comprised of mostly decayed sill logs which partially rested on boulder pilings. The southeast portion of the building, destroyed during trail construction during the mid-1980s, probably extended off the terrace edge and rested on stone pilings. The northeast-southwest dimension of the building was 7.9 m (25.9 ft. or 3.7 sazhen). The northwest-southeast dimension was indeterminate due to destruction by trail building during the 1980s. A 2.0 x 1.4 m brick platform was located inside the structure near its southwest side. This feature, comprised of a single layer of bricks resting on soil, may have been a stove platform. The personal and domestic artifacts from Building 1, which contrast with the industrial materials from Buildings 2 and 3, suggest a possible domiciliary function. This may have been the "quarters for the shopworkers" described by Khlebnikov (1994:139).

A typological mean ceramic date (MCD) of 1827 and backmark MCD of 1828 for Building 1 is in stratigraphic concurrence with MCD's for the other buildings, and is consistent with general observations. Daniel Thompson (this volume) has described the depositional sequence for the workshop area in more detail. Thompson's data suggest that Building 1 was the third of the four excavated buildings to have occupied the site, preceded by Buildings 2 and 3, and followed by Building 4. It is possible that Building 1 was partially contemporaneous with Building 3 (or less likely, with Buildings 2 and 3).

Building 2:

Building 2 (the forge building) was first identified on the basis of a brick feature partially exposed in 1997. Additional work in 1998 fully exposed this feature, along with an adjacent floor deposit and the sill timbers of a wooden building. Due to associated slag and other evidence of iron and copper working, the brick feature was subsequently identified as the base of a metalworkers' forge or "smithy" (Figure 6.7). The small building in which it was contained measured 4.0 m (13.1 ft. or 1.9 sazhen) northeast-southwest by 3.6 m (11.8 ft. or 1.7 sazhen) northwest-southeast. The building appeared to have been constructed by a *post-in-ground* technique, in which timbers were secured to the outsides of posts sunk into the ground. The forge was located in the east corner of the building, the bricks having been laid on a rock slab foundation. A buried air duct, comprised of a hollowed timber, extended at least 1-2 m southwest from the forge and possibly outside the building. A series of five parallel iron bars across the brick feature appear to have served as a grate for fuel, although no bricks were preserved above the bars. Parallel and perpendicular timbers preserved in the south corner of the building appear to have been floor joists, indicating that the southwest portion of the building was floored (Figure 6.8). No evidence of a door was identified, but it likely would have faced southwest, at the opposite end of the building from the forge, or possibly northwest. A large (0.5 m diameter), shallow postmold with brick props was located along the interior southwest wall of the structure, and may indicate the location of a buried stump which was used as a work table or anvil platform. Building 2 was interpreted as a metalworkers' shop where, based on residues and artifacts, both ferrous and copper-based metals were worked. The floor deposit yielded evidence of sheet copper work, as well as the casting of copper or copper alloys. Along with Building 3, this shop may have also served artisans engaged in other industries such as wood-working, gun repair,

Figure 6.7. The lower portion of a metalworkers' forge in Building 2.

Figure 6.8. The substructure of Building 2 included a large postmold and possible floor joists, typical of the *izba-seni-lket* (chain-link) style architecture of 17th and 18th century Siberia.

garment/shoe repair and manufacture, and general equipment repair. Whole sheets of mica, along with angular scraps, were also recovered from the workshop floor. A lack of stitching holes, along with the size and angular shape of the worked pieces, suggests a function other than for windows. It is possible that these were used in the manufacture of candle lanterns. A typological mean ceramic date (MCD) of 1820 for the building is in stratigraphic concurrence with typological and backmark MCD dates for the other buildings, and is consistent with general observations. Daniel Thompson (this volume) has described the depositional sequence for the workshop area in more detail. Thompson's data suggest that Building 2 was the first of the four excavated buildings to have occupied the site, followed by Building 3, Building 1, and Building 4.

Building 3:

Building 3, also interpreted as a workshop on the basis of associated features and artifacts, was located immediately northwest of Building 2. It was identified on the basis of poorly preserved sill timbers, possibly supported by sunken posts like Building 2. Only portions of the northwest and southwest walls were identifiable, and no entries could be ascertained. The northeast-southwest dimension was at least 4.2 m (13.8 ft. or 2 sazhen), although the northeast wall is poorly defined. The northwest-southeast dimension was in excess of 3.2 m (10.5 ft. or 1.5 sazhen), but the southeast wall could not be located. Several internal features were documented. A brick platform (Figure 6.9) in the west corner of the building was similar to that described for Building 1, albeit somewhat smaller. This feature, also believed to represent a stove foundation, measured 1.1 m (3.6 ft. or 0.5 sazhen) northwest-southeast by 1.0 m (3.3 ft. or 0.47 sazhen) northeast-southwest. It was comprised of a single layer of hand-made bricks. Another feature was comprised of a hewn wooden gutter imbedded in the earthen floor of Building 3 (Figure 6.10, A). The gutter extended the length of the structure from southwest to northeast, although the northeast terminus was not discernable. Given that Building 3 is believed to have been used for metalworking activities, it is possible that this feature represents a drain that was related to the annealing process. Approximately 50 cm southeast of the gutter was a feature comprised of a large stone slab resting upon bricks (Figure 6.10, B). Because iron staining was present on the slab, this feature has been interpreted as a possible anvil platform. In addition to the described features, four distinctive postmolds were documented northeast of the brick platform. Three of the postmolds contained bricks or cobbles which had served as post supports. The postmolds seemed to originate at the Building 3 floor, which was well-defined, and are interpreted as evidence of support posts for either the building or its internal structural features.

Like Building 2, Building 3 is interpreted as a workshop for the manufacture and repair of various types of items. Floor residues and artifacts suggest that both ferrous and copper-based metals were worked, including the casting of copper alloys and sheet copper work. The building may have also served artisans engaged in woodworking, gun repair, garment/shoe repair and manufacture, and general equipment repair. A sample of ceramic sherds from the Building 3 floor deposit yielded a mean ceramic date (MCD) of 1822 based on typology, and 1820 based on backmarks. The backmarks also produced a terminus post quem (TPQ) date of 1818. These dates are in stratigraphic concurrence with typological and backmark MCD dates for the other buildings, and are consistent with general observations. Daniel Thompson (this volume) has described the depositional sequence for the workshop

Figure 6.9. This brick platform in Building 3 rests upon an organic lens (note woodchips) derived from earlier activities, probably associated with Building 2.

Figure 6.10. Features inside Building 3, including a hewn wooden floor drain (A) and a possible anvil platform (B) of brick and stone (note iron staining).

area in more detail. Thompson's data suggest that Building 3 was the second of the four excavated buildings to have occupied the site, preceded by Building 2 and followed by Buildings 1 and 4.

Building 4:

Building 4 was identified on the basis of several decayed timbers and sill logs, along with a well-defined boulder foundation to the southeast. The northwest-southeast dimension of the building was a minimum of 11 m (36 ft. or 5.2 sazhen) based on archaeological evidence. However, the structure probably extended off the terrace edge to the southeast, where it was supported by boulders and pilings that were removed during 20th century trail construction. The northeast-southwest dimension of the building was a minimum of 3.7 m (12.1 ft. or 1.7 sazhen) based on archaeological evidence, but probably approximated 6.5 m (21.3 ft. or 3.0 sazhen) based on available landform. Aside from the boulder foundation, evidence of the structure was very ephemeral due to modern disturbance.

Building 4 was the most recent of the four buildings identified archaeologically, and may have been the last Russian building to occupy the terrace. The 1867 transfer map (DeArmond 1981:72-73) depicts a single large building, identified as a "wash and bathhouse," at this location. Photographs from circa 1890 depict a smaller, dilapidated building characterized by Russian style log architecture (Figures 6.11 and 6.12). It is possible that the transfer map included adjoined buildings that were removed between 1867-1890. Other historic photos indicate that the last building on the terrace was gone by 1898, and was probably removed circa 1894-98. While the construction date for Building 4 has not been determined, ceramic sherds from an associated floor deposit yielded a mean ceramic date (MCD) of 1835 based on typology, and 1839 based on backmarks. The backmarks also produced a terminus post quem (TPQ) date of circa 1835. These dates are in stratigraphic concurrence with typological and backmark MCD dates for the other buildings, and are consistent with general observations. Daniel Thompson (this volume) has described the depositional sequence for the workshop area in more detail.

Stratigraphy: *(by Daniel Thompson)*

Three major strata were identified in association with the block excavations. These three episodes of site modification and deposition were designated Stratum I, II and III (Figure 6.13). Artifact collection followed this basic stratigraphic structure. The strata are described from top to bottom.

Stratum I:

Stratum I was a brown sandy loam with little or no organic preservation. This deposit represented a series of 20th century site disturbances. Artifacts within this layer demonstrated little/no vertical control, and consisted of mixed 19th and 20th century artifacts. The deposit varied in thickness throughout the units, depending upon the nature of disturbance, but generally measured 0.5 m to 1.0 m in thickness.

Two disturbance episodes are known to have affected the integrity of this upper deposit. According to local informants, the natural bench was used as a garden during the first half of the 20th century. In particular, the block excavation locus in the workshop area

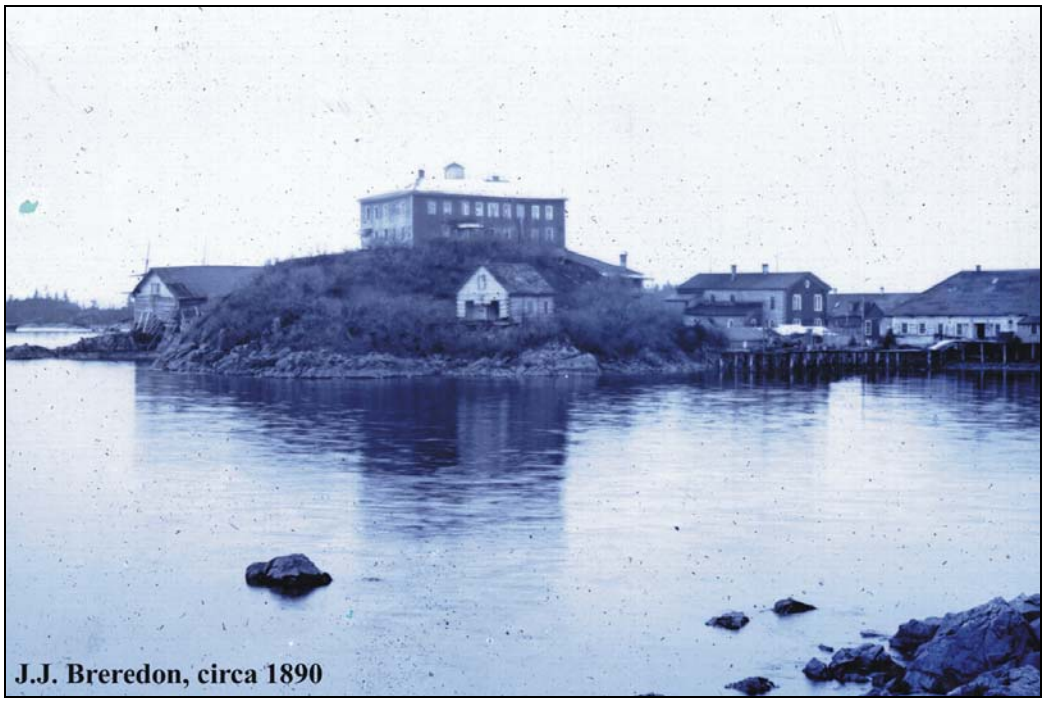

Figure 6.11. Photo of Castle Hill by J.J. Breredon, circa 1890. (collection of Dave McMahan).

Figure 6.12. An albumin print of Castle Hill by Albertstone and Moosbauer, circa 1890. Note the smaller building in the foreground to the right. (collection of Dave McMahan).

was intensively used as a Victory garden during World War II. The upper level of the deposits (Stratum I) is considered a "plow zone."

The second episode of disturbance was associated with Alaska State Parks trail improvements during the mid-1980s. Archaeological remains of this activity included the deposition of crushed stone within Stratum I, and the partial destruction of deposits associated with Buildings 1, 3,and 4. The construction of this trail obliterated the central house floor deposits of Building 1, as well as structural features associated with the southern wall of this feature. The southern half of Building 3, including most floor deposits and structural remains, was also obliterated. Building 4 deposits along the footprint of trail construction were completely lost.

During the early phase of excavation in 1997, Stratum I was excavated by 10cm levels. Preliminary analysis of the 1997 level-based assemblages indicated that this layer contained little or no intact stratigraphy. As a result, field procedures during the 1998 season shifted to accommodate the lack of analytical integrity. During the second field season, Stratum I was removed as a single layer.

Stratum II:

Stratum II, an undisturbed deposit at the base of the Stratum I disturbance, contained six recognizable substrata. Ceramic dating has strongly suggested a cumulative c.1805-1840 date for these strata. Although soil in Stratum II was generally a sandy loam, most deposits included little or no soil formation. Stratum II demonstrated ubiquitous preservation of organic materials, including wood, human hair, fur, feathers, textiles, rope and tallow. Two pH tests of Stratum II soil samples, (5.4/5.9), indicate that the presence of vast densities of axe-cut spruce chips in these deposits increased the acidity and preservation qualities of the soil. Inorganic durable artifacts of domestic, architectural and industrial nature were also present. The thickness of these deposits varied by unit and substrata, and ranged from as little as 5 cm to 1.75 m. Field collection procedures for undisturbed Strata II followed natural layers and 10 cm levels as appropriate.

Stratum IIa (Sheet midden or historic trash deposit):

This deposit was distributed along and outside the walls of the structural complex. A decrease in thickness was found to be directly proportional to the distance from the primary structural features. Mendable ceramic sherds of large size, along with articulated bird wings and fish remains, indicated that Stratum IIa was a secondary trash deposit (South 1977:297). Materials present in this sheet midden were likely derived from activities associated with the four identified archaeological structures. The presence of rodent and dog gnawed faunal remains indicate that the trash deposit was exposed, and are consistent with a sheet midden context.

Stratum IIb (Building 4):

This sub-stratum was associated with the structural remains and floor of Building 4. Associated structural elements included floor joists, sill logs and a partial stone foundation. This deposit was heavily impacted by gardening and trail construction, and was typically a thin lens (>10 cm) of organic and durable materials. Building 4 and associated deposits were stratigraphically intrusive into underlying deposits.

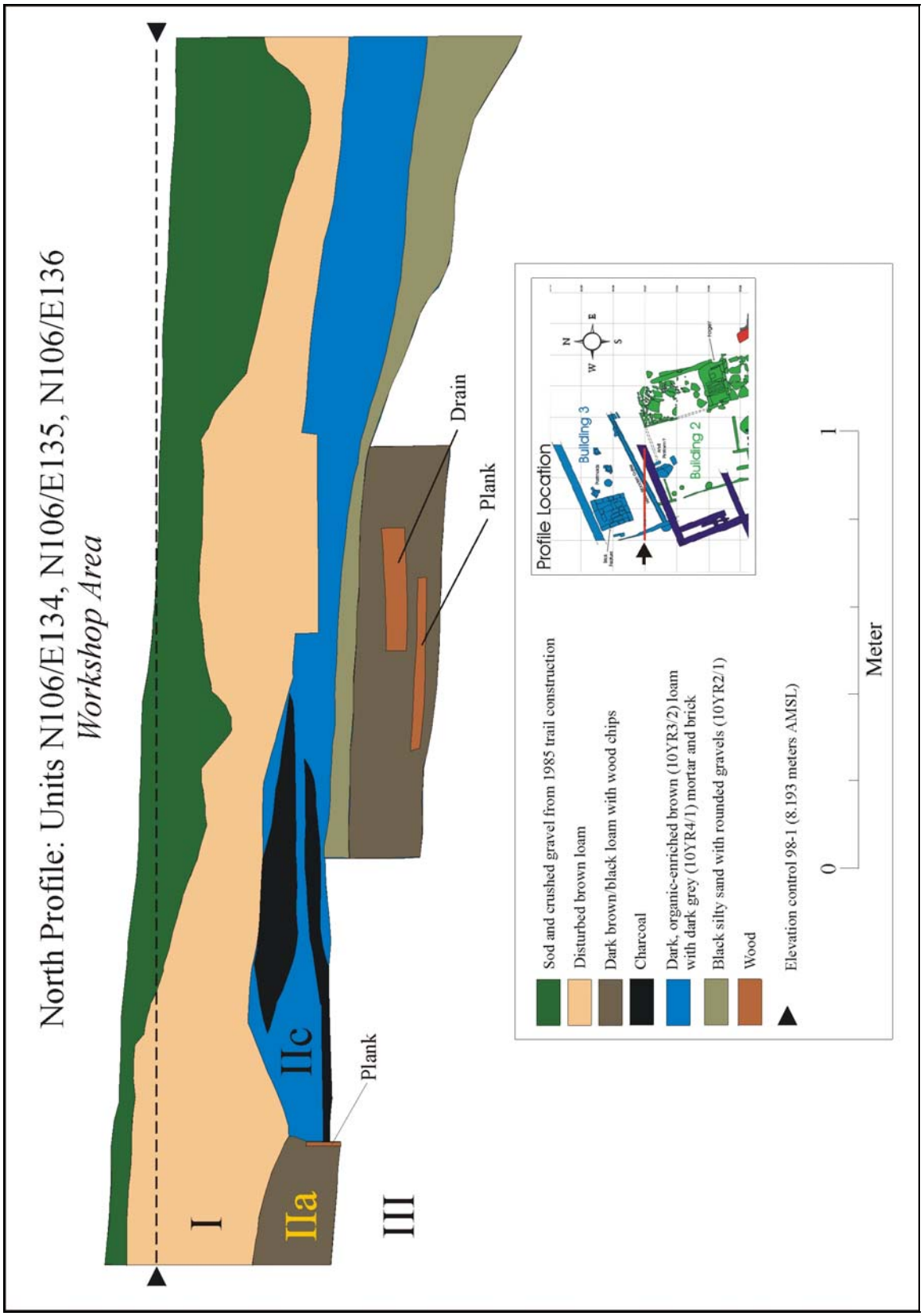

Figure 6.13. Representative stratigraphy of the workshop area (by Margan Grover).

Stratum IIc (Building 3):

Building 3 deposits were located directly beneath the IIb intrusive construction episode. This deposit was characterized by a thin but compact cemented floor layer of brick, mortar, charcoal and copper waste that was bounded by wooden sill logs. Abandoned and/or broken metalworking tools were found imbedded in this deposit, which is interpreted as the floor of the second metalworkers' shop identified at the site. Ceramics and other fragile artifacts were in extremely fragmented condition, probably due to the intense industrial activities performed within the building. The southern half of this floor deposit was nearly obliterated by 1980s trail construction.

Stratum IId (Building 2):

Beneath IIc floor deposits was a layer of wood waste, sheet copper waste and artifacts within the foundation of Building 2. At the base of this deposit were split sill logs and floor joists of Building 2, the earliest workshop of those investigated. The midden soil above these floor features was likely a secondary deposit that predated Building 3, and post-dated the abandonment of Building 2. The use of abandoned structural features for trash disposal is a common theme in historic contexts. The depth of this fill and floor deposit was approximately 0.5 m, and was restricted to the footprint of this workshop.

Stratum IIe (Building 1):

This deposit encompassed the undisturbed floor and underlying midden fill of Building 1. Associated with the brick platform (hearth feature) in building 1 was a discontinuous layer containing wooden floor joists and planks. This floor contained concentrations of small artifacts (*i.e.* beads, gun parts) typical of primary *de facto* deposition. A cache of iron chisels on this floor also indicated that *de facto* selective abandonment was active in the archaeological formation process (South 1977: 298). The central floor deposits of this structure were impacted by previous trail construction.

Stratum IIi (Indeterminate):

This layer consists of undisturbed soil deposits not assigned to specific features or episodes. While the deposits have been assigned to undisturbed Russian period provenance, these strata were often associated with walls and other areas where 19th century disturbance had compromised feature association.

Stratum III:

Stratum III was a gray gravel substrate below deposits associated with the Russian occupation of the site. Characterized by compact, wet gravel and sand, the turbated upper portion of the substrate included a sparse concentration of artifacts derived from Stratum II. In two units (N105/E136 and N105/E135), a large circular fire-reddened feature at the Stratum III transition indicated an episode of burning associated with initial site clearing. Beneath the Building 1 cultural (II) deposits, Stratum III was composed of angular cobbles and boulders. Barnacles attached to some of these indicate that the bench area was modified and expanded with intertidal fill to accommodate Russian period construction. In most areas of the site, Stratum III was sterile. Initially, some units were excavated deeply (up to 1.0 m) into Stratum III in the event that prehistoric materials might be present below the

historic components. Following negative results, field collection procedures included excavation as a natural layer, and at least 10cm beyond the last recovered historic artifact. No evidence of earlier prehistoric components was discovered within the confines of the block excavations.

Discussion:

Extensive block excavations near the base of the southeast side of Castle Hill produced an array of *in situ* structural remains and associated deposits that are believed to have been associated with intense use of the area by artisans and craftsmen of the Russian-American Company. While dated artifacts from this area span the period of Russian and American occupation at the site (circa 1804-present), mean ceramic dates for *in situ* strata ranged from approximately 1813-1839. Ceramic dates for individual strata, coupled with general field observations, allowed for the reconstruction of an occupational sequence for the four buildings identified archaeologically. In chronological order, mean ceramic dates for the buildings were: Building 2 (1820), Building 3 (1820-1822), Building 1 (1826-1827), and Building 4 (1835-1839). Stratigraphy and the superposition of building footprints were consistent with mean ceramic dates in placing the structures in chronological order. This indicated that Building 3 replaced Building 2 as a metalworkers shop. Due to overlapping footprints, these buildings could not have been occupied at the same time. It is possible, however, that Building 1 (a possible bunkhouse or quarters) was constructed while Building 3 was still in use. This is the most plausible possibility for the simultaneous use of any of the four structures. The remains of Building 4, clearly deposited on top of the other three structures, suggested that this later structure was not associated with the workshop complex.

The investigation of this early 19th century industrial complex, which has been termed the workshop area, has added new dimensions to understanding of the industries of Russian-America and daily lives of the company workers. The data from this area are applicable to many of the research questions set forth in the research design (McMahan 1997:12-13). The more definitive data sets relate to questions regarding the architecture and industries of New Archangel:

> (6) What Russian-American industries are represented by the Castle Hill artifacts? What types of items were manufactured locally or in the Russian-American colonies, as contrasted with imported items [McMahan 1997:12]?
>
> (10) What are the construction details of the earlier Castle Hill structures, including those of Tlingit as well as Russian design? For example, it may be possible to date and locate some of the cellars that are known (from archival records) to have been associated with Russian buildings that pre-dated the Castle [McMahan 1997:13].

Russian iron, glass, and textile industries were established in Siberia beginning in the late 17th century. In late 18th century Irkutsk, guildsmen, merchants, craftsmen, and artisans produced wheat flour, beef, butter, tallow, leather, silk, coarse textiles, iron and iron hardware, glass, distilled spirits, copper goods, salt, rope, tar, and other supplies for the China and Alaska trade (Crowell 1997:155). Due to long, difficult supply routes for getting these finished goods to Russian America, comparable industries were established in the American settlements during the late 18th century. By the early 19th century, New Archangel had become a primary manufacturing and redistribution center for the Russian

settlements along the North Pacific coast. The Castle Hill workshop complex is believed to have been one of several dedicated to the repair and manufacture of metal items, including items for shipment to outlying settlements. For the year 1830, Khlebnikov (1994:138-140) described some of the old buildings, on and around Castle Hill (in the fort), which were falling apart. These included "workshops, blacksmith's shops, quarters for the shop workers and a metalwork shop." While Khlebnikov does not specify the exact locations of these shops, archaeological findings suggest that at least some of the structures were on natural terrace on the east side of Castle Hill. The archaeological record also supports the location of domestic quarters (Building 3) at this location. Of the coppersmiths, Khlebnikov wrote:

> The coppersmiths have three shops. In two of them they make new copper and tin cauldrons, cups, teapots, coffee pots, siphons, funnels and other types of vessels, part of which is used for trade in California and with the savages of North America and to supply the other colonies because other kitchen utensils are not ordered from Russia; one shop is especially responsible for making small ship fittings; sometimes they cast pins and hinges for the ships' rudders and bells not more than five puds in weight; small bells are used on ships and large ones are traded or sold in California [Khlebnikov 1994:140-141].

Artifacts from the workshop area included copper (or alloy) castings, sheet copper cups and bowls, copper rivets in various states of manufacture, and numerous handle lugs for the manufacture or repair of copper pots, along with other hardware and utensils. Tin products were not recovered, but these probably would not have survived the acid soils. The forge in Building 2 was probably used for a variety of tasks relating to metallurgy. A preponderance of copper residues (slag, castings, ingot stock) suggests that this was the primary activity of the shop. The interior surface of a large iron ladle from the site visually shows traces of gold, lead, and copper. Also, a recovered stone mortar exhibits blue-green, presumably cuprous, residue on the working surface. While conclusive interpretations must await chemical testing, these items – along with the presence of crucibles -- suggest that alloying was taking place around the forge. Also identified in the workshop area were implements and residues associated with blacksmithing (ironworking). These include anvil accoutrements and raw iron stock, including a "bloom." The bloom, a large iron "blob" with charcoal inclusions and impurities, was probably formed during the conversion of cast iron stock to wrought iron in the forge. While cast iron was useful for casting gun and trap parts, etc., wrought iron was generally more useful for on-site blacksmithing due to its malleability and lower melting temperature.

Dated deposits in the workshop area suggested that, aside from Building 4, the identified structures were used during the 1820s-1830s period. Very few primary manufacturing sites have been investigated archaeologically in Russian-America, notwithstanding the basic colonial cottage industries (*i.e.*, lead shot casting, fur preparation, etc.) that were practiced throughout the colonies. An exception, overlapping the same time period, was the Russian Middle Bay brick kiln site near Kodiak, investigated by Ty Dilliplane (n.d.-1, n.d.-2) in the early 1980s. Five excavation phases at the brick kiln site over a five-year period revealed details of the furnace in which the bricks were cured, along with evidence of structural footprints. This site, however,

produced only a sparse collection of iron spikes, implements, and ceramics. Because the kiln workers' habitations were located at an undetermined location away from the site, few domiciliary materials were recovered.

Extensive fieldwork at the Three Saints Bay settlement on Kodiak Island produced a series of late 18th century structural remains and associated artifacts (Crowell 1997). Industries practiced at the site included fur processing, whaling, rope making, blacksmithing, barrel making, and gardening. Notwithstanding an overlay of 19th century materials, the Three Saints Bay assemblage largely reflected a procurement pattern consistent with Gibson's (1976) earliest, pre-1799, phase. This included supplies that were shipped directly from Okhotsk, after a long overland haul from Irkutsk and the Chinese border settlement of Kiakhta (Crowell 1997:26). Local industries supported the settlement and contributed to company activities in general. Despite an earlier timeframe, and an absence of intense manufacturing for redistribution, there are many similarities between the Three Saints Bay and Castle Hill assemblages.

At Fort Ross, Russia's California supply base from 1812-1841, excavations at the old warehouse ("magazin") site during the 1970s produced architectural details, along with a small collection of architectural, trade, and domiciliary materials (Farris 1990:475-505). While basic blacksmithing and metalworking took place at the Ross settlement, most manufactured items were obtained from Sitka or elsewhere. More recent ethnohistorical and archaeological studies at Fort Ross have focused on Native American domiciliary deposits outside the fort, rather than manufacturing industries (Lightfoot, et al. 1991; Lightfoot, et al. 1997).

Of particular interest to understanding the Castle Hill workshop complex are data from the Kurile Islands, between the tip of Siberia's Kamchatka Peninsula and Japan (Shubin 1990:425-450). Archaeological excavations at the Kurilorossiia settlement during the 1980s produced materials remarkably similar to those from the Castle Hill workshop complex (Cf. Ohtsuka, personal communication). At the Kurilorossiia settlement, Shubin excavated two Native semi-subterranean dwellings, along with remains of a wooden house, a steam bath, and a blacksmithing complex (Shubin 1990:430). The rectangular, three room wooden house excavated at Kurilorossiia was said to be of a chain-link (*izba-seni-lket*) style widespread in17th to 19th century Russian Siberian villages (Shubin 1990:430-431). The *post-in-ground* architecture and placement of timbers is remarkably similar to the buildings associated with the metalworkers' complex at Castle Hill. Also, the long-axis orientation of the Castle Hill buildings (northwest-southeast) is consistent with that of the Kurilorossiia structure. While this may be fortuitous, Shubin (1990:431) reported that this deviation from the cardinal points, so that the corner of the building was oriented towards the bay for maximum protection, was a distinguishing feature of all Kurilorossiia structures. All that remained of the forge at Kurilorossiia was a subrectangular stone pavement with hearths, along with metalworking debris and implements (Shubin 1990:432-433). The Castle Hill forge, constructed of bricks that were apparently not available at Kurilorossiia, rested on a rectangular platform of cobbles and boulders.

The range and types of artifacts from the Castle Hill workshop complex are consistent with Gibson's (1976) model, which states that a broader range of durable goods was available after an 1840 trade agreement between the Russian-American and Hudson's Bay companies. The Castle Hill artifacts associated with Buildings 1, 2, and 3

pre-date the 1840 trade agreement. Their ongoing analysis has provided data applicable to research design questions that relate to material culture discard, class distinction, modification of materials for re-use, consumer choice, and changing material culture patterns through time (McMahan 1997:11-12).

(4) What is the pattern of material culture discard and curation at Castle Hill (cf. South 1977:195), and how does this pattern compare or contrast with other sites in Russian-America? For example, it may be possible to compare patterns of discard between Russian-American Company employees of management status (*i.e.*, Castle Hill) with those of working class employees in outposts such as Kolmakovskiy Redoubt (Oswalt 1980). The Castle Hill assemblage may also be compared with Russian-American assemblages from manufacturing sites such as the Middle Bay Brick-kiln in Kodiak (Dilliplane 1980; 1981), institutional sites such as the Russian Hospital in Sitka (Blee 1986), or with local assemblages related to activities of the clergy such as the Bishop's House (Shinkwin 1977).

(5) Is it possible, from the pattern of material culture discard discussed above, to define measures of socio-economic status (cf. South 1988:25) or behavior (Dilliplane 1985)? For example, studies have shown that the ratio of tea cups to flat ware is a correlate of socioeconomic status (Spencer-Wood 1987:16). It may be possible to define an archaeological measure of class distinctions by comparing the Castle Hill assemblage with assemblages from other sites in Russian-America, including those cited above.

(7) How were materials modified for re-use? For example, preliminary excavations at Castle hill revealed a glass fragment which had been intentionally retouched through the removal of pressure flakes. Prior to the Russian occupation of Castle Hill, its Tlingit inhabitants may have adapted broken trade items for re-use. A scarcity of supplies during the early Russian occupation of Castle Hill may also have necessitated the creative re-use or repair of some items which would have been discarded if replacements had been readily available.

(9) What are the consumer choices in material items used at Castle Hill? For example, Deagan (1988:9) has examined consumer choice on historical sites by comparing the archaeological record with locally available materials on inventory lists.

(12) How did patterning within the material culture record change through time? A rich but incomplete archival record of Castle Hill, coupled with sparse undisturbed deposits, provides a historic context in which to place materials from disturbed areas of the site. It may be possible to test a hypothesis that "average to below-average quality goods were generally imported to the colonies... [except 1840-1850]... and colonial products consistently registered at below-average standards without exception" (Dilliplane 1990:402-403). An agreement was reached with the Hudson's Bay Company in 1839 to provide supplies to the Russian-American Company. If artifacts from the 1840-1850 period can be isolated, it may be possible to compare these with artifacts from earlier and later periods.

Artifacts from the Castle Hill workshop area can be viewed in the context of existing models for supply, location, and social organization in Russian-America. During Gibson's (1976) second phase (1799-1819) and third phase (1819-1840) the Russian colonies in America benefited by an increased trade with American sea otter hunting vessels, by cattle and grain from California, and by shipments of food and durable goods from Russia via the port of Kronstadt. These items supplemented supplies received from Okhotsk and contributed to a pattern of increasing diversity and quantity of material goods. The phrase "Paris of the Pacific" is said to have been used to describe 19th century Sitka due to elements of European social culture and the range of available material goods. Certainly, the Castle Hill archaeological data from pre-1840 deposits support a cosmopolitan view of Sitka. For example, the assemblage includes coconuts and husk fibers that may have originated from the Sandwich Island trade, British manufactured "Phoenix" buttons that may have derived from trade with the Columbia River region, hazelnuts (tentatively identified) that may have derived from trade along the U.S. west coast, coins and (tentatively identified) ceramics from Japan, export porcelain from China, ceramics from Western Europe, items made by several Alaska Native groups (from the Northwest Coast, the Aleutian Islands, and Northwest Alaska), and a broad array of materials that are distinctly Russian (buttons and other uniform parts, ceramics, glass, samovar parts, etc.).

With regard to location, Crowell proposed that:

> In general, a temporal trend of increasing quantity and diversity of imported goods (both for Russian use and trade) should be evident at fur trade company settlement sites (forts, capital towns, *artels*), although supply constraints remained a chronic problem throughout the Russian colonial period [Crowell (1997:25-26].

Based on an informal comparison with collections from smaller more remote (*i.e.*, lower order) sites, the quantity and diversity of materials represented in the Castle Hill assemblage support this hypothesis. More intensive studies of collections from sites contemporaneous with Castle Hill may provide more definitive insights into this pattern.

The range of material goods from Russian-American sites is also believed to have been influenced by the social status of the people who occupied the site. Society in colonial Russian-America was distinctly stratified according to ethnicity and rank. From the highest to lowest rank, these were comprised of the Russian elite, Russian workers, Creoles, Native company employees, Native elite, and Native commoners (Crowell 1997:29). Based on these social strata, Crowell (1997:29-30) developed a model that postulated an inverse relationship between imported goods and the status of Russian-American households. Russian-American colonial personnel at the highest levels supplied themselves with food, clothing, and housing that were more distinctly Russian than those of lower ranking personnel. Workers at the lower levels, however, relied more heavily on resources and housing characteristic of the region. At Castle Hill, this pattern may have been compromised as a result of the close spatial relationship between the quarters or work areas of the elite and those of the mid-range working class personnel (*i.e.*, Creoles and Native company employees). For example, we know from the archival record (Khlebnikov 1994:140-141) that the metalworkers who used the Castle Hill workshop complex were probably Creoles. It also appears, based on the archaeological recovery of distinctly Native

artifacts, that Native company employees (assistants?) may have also been present. The quarters and offices of the elite were located on top of Castle Hill, no more than 200-300 ft. from the workshop complex under discussion. This would have allowed the craftsmen and laborers in the workshops to gain easier access to European/Russian material culture than their off-site counterparts. It is probable that many of the artifacts recovered by archaeologists were lost or discarded by the craftsmen while repairing items for company service. Because the workshops served as both manufacturing and repair facilities, however, the workers probably also had opportunities to recondition or modify broken/discarded items for their own use. Certainly they would have had easy access to the refuse of the elite. To the extent that a number of modified items were recovered from the workshop area deposits, the archaeological record seems to support this concept. These included leaded cut glass decanter stoppers that had been intentionally flaked, along with individual crystals from a chandelier. These items may have been modified to serve as pendants. Ceramic sherds from this area included examples that had been perforated to repair broken vessels, including one with a preserved section of spruce root line in the drill hole. This pattern has been observed on Native sites from the contact period in Western Alaska. Other sherds exhibited intentional edge-grinding and rounding, apparently to create a labret. In some instances, glass sherds had been retouched for use as scrapers or other *in promptu* tools.