INTERIM REPORT

OF THE

CATOCTIN FURNACE ARCHAEOLOGICAL MITIGATION PROJECT

CONTRACT F522-152-770

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Apt. 303 Landover House
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January 30, 1988

Prepared for the Maryland State Highway Administration, Baltimore
Part 1: Investigation & Site Synthesis

INTERIM REPORT

OF THE

CORRECTION SURFACE & WATER QUALITY MITIGATION PROJECT

CONTRACT F555-125-V-J50

Kennedy & Co., Inc.

3021 Landover House

202-774-0000

January 30, 1988

Prepared for the Maryland State Highway Administration, Baltimore
THE 1979 EXCAVATIONS
AT THE
CATOCTIN FURNACE ARCHAEOLOGICAL MITIGATION PROJECT
U.S. ROUTE 15, CATOCTIN FURNACE, MARYLAND
(CONTRACT P522-152-720)

Kenneth G. Orr, Ph.D., Project Director,
Principal Investigator, Team C.
Ronald G. Orr, B.A., Chief Assistant, Team C.
Ronald L. Thomas, M.A., Principal Investigator,
Team B.
Alex Townsend, Ph.D., Principal Investigator,
Team A.

(With Appendixes by John L. Fauth, Ph.D., Geologist,
J. Lawrance Angel, Ph.D., Physical Anthropologist;
Edward F. Heite, M.A., Industrial Archaeologist; Edith
Dietz, Conservator).

Orr & Son Archaeological Consultants
Apt. 303 Landover House, 3201 Landover Street
Alexandria, Va., July 1980

Prepared for the Maryland Highway Administration, Baltimore, Md.
February 10, 1989

Eugene T. Camponeschi, Chief
Bureau of Project Planning
State Highway Administration
300 W. Preston St.
Baltimore, Md. 21203

Re: U.S. Route 15, Catoctin Furnace
Archaeological Mitigation Project.
F522-152-770
Interim Report and Proposal for
extension of Project.

Dear Mr. Camponeschi,

I am enclosing an interim report for the above captioned subject (149 pages including 48 maps and charts) and a proposal for extension of the project to complete migration responsibilities in regard to archaeological resources to be impacted by the dualization of Route 15, as requested.

Thank you kindly,

Sincerely,

Kenneth G. Orr, Ph.D.
Orr & Son, Consultant
Apt. 303, Landover House
3201 Landover Street
Alexandria, Va. 22305

Attached:


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**Part**

1. Analyses and Conclusions Summaries (Kenneth G. Orr, Ph.D. Project Director). 6 Pages.


3. Recent Excavations at Catoctin Furnace, Maryland. (Mid-Atlantic Archaeological Research, Inc.) 24 pages. Team B.


**Appendices**

A. A Progress Report. (John L. Fauth, Ph.D. Consulting Geologist) 9 pages.

B. Some Needs and Opportunities for Archaeological and Historical Research at Catoctin Furnace. (Edward F. Heite, SOPA, Industrial Archaeologist consultant). 16 pages.

C. Preliminary Physical Anthropological Analysis of Check 6, Site 18FR323. (J. Lawrence Angel, Ph.D.) 1 page.
Mitigation Analysis.

Archaeological mitigation consists of approaches and devices for lessening the adverse effect of the impact of construction on archaeological resources (Advisory Council on Historic Preservation, Jan. 30, 1979) pp.6074-6077). The nature of the adverse effect on archaeological sites of the construction for the dualization of U.S. Route 15 was determined in the 1977 intensive survey (Orr and Son, August 1977). The basic objectives of this report are (1) to determine the extent to which the 1979 excavations satisfied the mitigation requirements of the project, and (2) to define and propose additional mitigation activities if required for the project.* Following is a short summary of the mitigation factors for each site in the 1979 project - the excavations of which are discussed in Parts 2, 3, and 4 of this report. The mitigation requirements for the project were spelled out in a paper which was submitted to the Advisory Council on Historic Preservation prior to the beginning of excavations in July 1979 (Orr et al, July 12, 1979), and are reviewed with the 1979 excavations in this report.

Check 3. Iron-working Site (18FR320). The "forge", located in the eastern area of the site, was determined to be unaffected by the proposed road construction and its contingency funds were allotted to the excavation of the "Old Forge" in the western area. (John Milner Associates report is Part 2 of this paper)

Due to the extent and complexity of features in the western area of the site they couldn't be satisfactorily mitigated within the allotted time. Specifically, the impacted area of the site represented a multi-purpose iron-working unit(s) with many of its functions, such as water-power pits, forge hammer location, and the like, still to be unearthed. (Heite, Appendix B, pp.10-14).

Edward Heite, industrial archaeologist of the project, has indicated that a logical paradigm for the "Old Forge" site is the Charlottesburg Middle Forge (northern New Jersey). Here a series of small water wheels on each side of a structure powered hammers, bellows, and other machinery of an iron-working unit. (Lenik, 1974)

The site represents a series of interrelated early period features which will be impacted by overlay of Alignment 1. These features are unique and not likely to be duplicated outside of the impacted area in other parts of the Catoctin Furnace site. Since the historical information which they contain forms a valuable and not otherwise available portion of the Catoctin Furnace record it is proposed that additional time be allowed for excavation and analysis in order to complete the mitigation of the site.

It is noted that the mitigation of the Auburn Dam has been completed as a result of the present excavations of Orr and Son team (Check 17, Trenches 6 and 7) and Orr and Son, 1977, intensive survey (pp.8-17); but that excavations under the Dam are called for.

It is understood that closest cooperation between the principal investigator, and the project industrial archaeologist and project director will be required to achieve the desired mitigation of the site.

Oral history and land records data will seek to identify the functions, location, and time period of the features to amplify and confirm interpretations of the archaeological data.

Check 4. The Spring-Bathhouse Site (18FR321). It is believed that the archaeological findings at this site provide satisfactory mitigation for the adverse effects produced by the overlay burial of this site by the proposed road building. However, oral history data is particularly needed to interpret the 19th century features and materials found in abundance in this site. Since the site was utilized until about 1915 much data is expected for the Bathhouse period from the Oral History project (see below). Land records research has already given some data ;in the form of the Fitzhugh-McPherson surveys map of 1858 (volunteer information provided by Mrs. Marie Burns). An organized study on this subject (Orr, Febr 8, 1980) will be of greatest importance in substantiating archaeological interpretations. The site has been selected for monitorization (see below). The site was excavated by Orr and Son (Part 4).

Check 5. Amerindian Site (18FR322). This site was an Archæic
Period transient camp. Since it is likely that little or no permanent or semi-permanent structures were used it is recommended that no further archaeological investigations be considered necessary for mitigation purposes. (Mid-Atlantic Archaeological Research, Part 3)

Check 6. Historic Cemetery Site (18FR323). Twenty-six burials were removed by Mid-Atlantic Archaeological Research, Inc. in the 1979 excavation and an estimate 10-30 burials remain to be removed. The remains are now in the Laboratory of Physical Anthropology, Smithsonian Institution, where all adult skulls have been identified as negroid by Dr. Lawrence Angel, Chief Curator (Appendix C). It is obligatory to remove all skeletal material in cemeteries and steps have been taken by SHA to clear the right of way through another excavation by MAAR in the spring. (Part 3).

Check 7. Miners House (18FR324). The "yard" of this site within the right of way was excavated by MAAR adjacent to the foundation of the so-called Carty House. The features found, including a subsurface trash deposit, brick walk and slab and postholes associated with the house structure, as well as an innumerable posthole tests defined the nature of the area to be impacted by the construction of Alignment 1. No further excavation is considered necessary to assure the areas satisfactory mitigation. However, The State Archaeologist and Advisory Panel of the project requested that the protection of the house foundation (on the edge of the right of way) be assured by filling with sand. At present the advice of the Bureau of Soils and Foundations is being sought in regard to the best method of protecting this site from possible construction damage. (Part 3).

Check 8. Limstone Quarry (18FR325). The aborted limestone quarry reveal sufficient details concerning its archaeological situation to be considered sufficiently mitigated for the overlay impact anticipated as a result of the construction of Alignment 1 (Orr and Son, Part 4).

Check 10. Exhumed Cemetery (18FR326). This site did not require mitigation as it represented a family cemetery (not an historic site). If skeletal material remained following its exhumation by a SHA crew several years ago, there is no evidence of this or likelihood of such being disturbed by the proposed impact of the area in road construction. (Orr and Son, Part 4).
Check 19. Limestone Quarry and Kiln (18FR332). The limestone kiln of this site was determined to be too close to the road (on the shoulder) to be excavated. It was located under approximately 6 feet of shoulder soil, the removal of which would imperil traffic. The trench placed by backhoe into the quarry proper was sufficient to provide mitigating data and further excavation will not be required. It is expected that oral history data will greatly amplify and assist in the interpretation of the archaeological evidence. (Orr & Son, Part 4).

Monitorization Analysis.

It was requested by the Advisory Panel and the State Archaeologist the Check 4, Feature 1, Spring-Bathhouse be prepared for monitorization. This site was excavated fully to provide mitigation clearance and was recorded by photograph and maps so as to allow the site to be re-opened in the future to see the effect of the Alignment 1 road on the site. It is planned to pack the site with sand after a drain has been erected to carry away the underground spring water. These plans are under the advisement of the SHA Bureau of Soils and Foundations.

Synthesis.

A basic objective of an archaeological data recovery operation is to secure information from the property being studied that will provide a usable sample of data on all research problems that reflect the property's research value. The Catoctin Furnace sites that will undergo impact from SHA road construction contain research data that contributed to the understanding of the site as a whole, which, in turn contributes to an understanding of the development of the American iron industry in the 18th and 19th centuries. A broad and penetrating synthesis is therefore required as an end result in the mitigation process. (*Federal Register, v.42, No.9, Jan. 28, 1977, Par. 66.2, 2-(iv), p. 5376)

A preliminary synthesis was attempted following the intensive survey of the site (Orr & Son, Aug. 1977) pp. 91-92). This outline of Early, Middle, Late and Post-Furnace periods will be modified and augmented with the data of the 1979 and the proposed 1980 excavations. Included in the current synthesis, which will appear in the Final Report, will be all the interpretations deriving from data previously excavated and available on the archaeology of the Catoctin Furnace: Mentzer c.1972 (WPA dig 1935), Contract Archaeology, Inc. 1971 (historic and archaeological survey).
Check 11. Race Pond (18FR327). The race pond investigations include backhoe and hand excavations, observations, and borings. The borings put down into the pond and in the vicinity to get the subsurface archaeological situation is currently in process of analysis. The observations included studies of raceways outside of the right of way for their implication on understanding the target area of SHA road construction. Oral history and land records findings proposed as an extension of the 1979 project are needed to assist in interpreting the archaeological findings. (Orr and Son, Part 4)

Check 12. Iron Mines and Charcoal Road. The three iron mine areas, Features 1, 2 and 4, were excavated by backhoe and Feature 2 and 4 excarnned by borings which are in the process of analysis by Dr. Fauth and Dr. Harrington, consulting geologists at SUNY/Cortland. The Charcoal Road (Feature 6) was excavated with backhoe and by hand. It is believed that further excavation will not be required for mitigation. However, oral history and land records studies of the area are regarded as necessary for fullest interpretation of the archaeological findings. (Orr & Son, Pt.4)

Check 15. Ore Railroad (18FR329). Excavations, and observations are believed sufficient to satisfy mitigation requirements for this site. Oral History data available on the Big Ore Bank mine of which Check 15 is part is needed to check accounts already gathered and new information. (Orr & Son, Part 4)

Check 16. FitzHugh-Kunkel Ore Mine (18FR330). The entrance to the mine was excavated by hand revealing railroad and country road features as anticipated. The information gathered was considered sufficient for mitigation purposes. Oral history data being sought in the proposed project will support and amplify understanding of the site area since the roads were in use until 1911. (MAAR, Part 3).

Check 17. Raceway (18FR331). The backhoe trenches and tests were excavated by hand to give a detailed picture of two systems of hydraulic power. The excavations are generally sufficient for mitigation purposes. This is because for the most part the raceways' sections represent the waterway section in which water was being transported, and one section of the site gives similar information to another section. It is believed desirable to have further excavation of the raceway as it approaches Check 3, iron-working site in the vicinity of Auburn Dam. The plan submitted by Milner Associates for examination of the raceway at this point appears adequate. Oral History and Land Records Projects' contributions to understanding this site are invaluable.
Orr and Orr 1975 (casting shed of Stack #2), Orr and Orr 1976 (engine house of Stack #3, retaining wall base tests), Orr & Son 1977 (intensive survey). Materials excavated by the writer are believed to be available for observation and comparison with the finds of the 1979 and proposed 1980 digs in the Division of Archaeology, Maryland Geological Survey, Johns Hopkins University.

A series of conferences involving the principal investigators, advisory panel and interested persons will be held at the field laboratory in Thurmont, Maryland in preparation of the Final Report. Data from the proposed oral history and land records projects will contribute to the final synthesis required for full mitigation.

Conclusions

Outstanding work to be done to complete the mitigation responsibility for sites to be impacted by SHA road construction is as follows:


2. Completion of mitigation excavation and analysis of remaining skeletal material at Check 6, historic cemetery site.

3. Oral History Project to cover all impacted sites.

4. Land Records Project to cover all impacted sites.

5. Synthesis of the Catoctin site as a whole as revealed by data from impacted sites and from other archaeological excavations completed to date.

PART 2

INTERIM REPORT OF CHECK 3 (18FR320) IRON_WORKING SITE

TEAM A. JOHN MILNER ASSOCIATES, INC.
PART 3

AN INTERIM REPORT

OF

CHECK 5, AMERINDIAN SITE (18FR322)
CHECK 6, HISTORIC CEMETERY SITE (18FR323)
CHECK 7, "MINER'S HOUSE" (18FR324)
CHECK 16, KUNKEL MINE ENTRANCE (18FR330)

TEAM B. MID-ATLANTIC ARCHAEOLOGICAL RESEARCH, INC.
PART 3

Recent Excavations at Catoctin Furnace, Maryland
Check 5: Amerind Site

Introduction:

In a survey report of Alignment 1 Corridor, U.S. Route 15 in Frederick County, Maryland (Orr and Son 1977) it was recommended that extensive archaeological excavations be conducted at Check 5, an aboriginal site located near the southern end of proposed highway construction operations. The work was subsequently contracted to Orr and Son and subcontracted to Mid-Atlantic Archaeological Research, Inc. of Newark, Delaware. This report documents the investigations carried out during the summer of 1979 by the Mid-Atlantic Archaeological Research, Inc. (MAAR) team.

In the summary prepared by Orr and Son for the American Indian site, substantial evidence for the presence of a prehistoric site was cited. The evidence is of two types: informant information and archaeological testing. Mr. William Renner, who is reported as having found a total of 10 projectile points in or near the proposed highway ROW, is a long time resident and former landowner of Check 5. Orr and Son reports that Mr. Renner specifically found material of prehistoric manufacture in his vegetable garden and within the area excavated for the Renner residence garage. The artifacts found by Mr. Renner were reported as being of Archaic Period and Early Woodland Period derivation (Orr and Son 1977).

An intensive archaeological survey of the property was conducted by Orr and Son in order to identify and locate the exact extent of the site. The method used included the excavation of eleven 2.5' test units throughout the site area. A plow zone of dark brown soil was noted which apparently yielded the artifacts found by Mr. Renner. Examination of the light brown subsoil stratum indicated also that aboriginal cultural material existed at that depth. In the subsoil, approximately 12 to 15 inches below the surface, artifacts such as milky quartz tools anddebitage, as well as charcoal flakes, were found.

The excavated data was interpreted by Orr and Son as indicating that some prehistoric occupation of the area had occurred and that further investigations were justified. The presence of prehistoric artifacts in occupational zones beneath the plow-disturbed top soil level are considered as significant to the interpretation of intra-site variation and chronological sequence. Such items as hearths, storage pits, post-molds and other aboriginal activity disturbances are also valuable sources of cultural data.

Orr and Son summarized their interpretations as follows; "Because of the potential value of in situ finds at an Amerindian site of the type represented here, it is recommended that the area of Test IK (Check 5) and the vegetable garden within the right of way of Alignment 1 be excavated in search of features and artifacts in the 12" to 15" level" (Orr and Son 1977).
Field Investigations:

The MAAR investigation began in July and ended in early August of 1979. A general pedestrian survey of the area was conducted. The garden, garage, nearby quartz outcrops, and adjacent mine and quarry area (associated with the iron industry of the late 19th and early 20th century) were all examined for evidence of aboriginal activity. Most areas were covered by vegetation, however, the surface examination of the garden area resulted in the discovery of a few rhyolite debitage flakes, some exhibiting secondary wear, and a single rhyolite projectile point fragment. (see Figure 1)

A series of survey points were established as control points. Station 1 was located 72' 6" north of the Northeast corner of the Renner garage. This point was recorded as Grid Datum Point (see Figure 2). A grid network of 10 foot squares was surveyed and staked for the purpose of subsurface post-hole excavation control. Five foot square test units were also keyed into the established grid system.

Station 2 was located as a datum plane for elevation recording. A precise topographical map of the excavated area will be prepared and submitted with the project field notes.

During the course of the MAAR investigations at Check 5, a total of 89 post-hole tests were excavated (Figure 2). Little evidence of archaeological resources was found. The post-hole testing demonstrated that the site was more intensely occupied near the crest of the knob in the garden area and sparsely occupied down the slope towards the Renner garage and the nearby quartz outcrops. This frequency distribution was used to identify areas of potential significance. All post hole tests were excavated well into sterile subsoil and each discernable substratum in each test was sifted through 1/4" mesh screen. In addition, each substratum was recorded on profile forms (see Figure 3 for example). Periodic soil samples were collected to be further analyzed in the laboratory is necessary. The mean depth of the plowzone based on the sample of 89 cores was nine inches and the mean depth to which the post holes were excavated was two feet and three inches.

A total of seven 5' square test units were excavated in those areas of Check 5 found to be most productive of artifacts (Figure 2). As revealed in the post hole tests, three major strata were encountered in the test squares. The plow zone was composed of a loamy clay, dark brown in color and of high organic content. The middle stratum was composed of fine loamy clay, somewhat soft, and yellowish-brown in color. Poor quality "sugar" quartz chunks were often encountered in this level. The third stratum was a compact yellow-brown clay with a large amount of shist fragments mixed throughout.

Artifacts were found in the plowzone and the upper part of stratum 2, as suggested by the previous excavations of Orr and Son (1977). Stratum 3 was sterile and is probably of Pleistocene origin.
Fig. 11. Ground Plan of Check 5
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Vertical Scale: 1 CM = 5"
LEVEL 1: FLOW ZONE - DARK RED BROWN LOAM WITH CHUNKS OF SHIST AND QUARTZ.

LEVEL 2: SUB-SOIL - MIXED YELLOW TON CLAY SOIL WITH GRAVEL/YELLOW WEATHERED SHIST DEPOSITS.

NOTE: THIS SOIL TYPE IS MUCH DIFFERENT THAN THAT ON TO W. IN THIS AREA.

LEVEL 1: FLOW ZONE - DARK RED BROWN LOAM (LOOSE) WITH NUMEROUS QUARTZ FRAGMENTS (MAJOR ARTIFACT BEARING DEPOSIT).

LEVEL 2: SUB-SOIL - MEDIUM BROWN CLAYY LOAM (LOOSE) LARGES AMOUNTS OF FRAGMENTED QUARTZ AND SHIST.

1. NATURAL QUARTZ CHUNKS IN SUB-SOIL.
Each of the strata encountered in the square test units was excavated as a separate unit by the use of flat shovels and trowels. All soil was sifted through 1/4" mesh except for Stratum 3, which was screened through 1/2" mesh due to its plasticity. Stratum 3 was encountered only in Test Unit 2 (Figure 2). Test Units 1, 3, 4, 5, 6 and 7 were terminated when Strata 3 was encountered. Profiles of excavation units are shown in Figures 4 and 5.

Summary:

Based on the MAAR pedestrian survey, post-hole tests and test square excavations, it is suggested that Check 5 was occupied sporadically by transient aboriginal peoples over a period of perhaps several thousand years. Although approximately 80 debitage flakes and 5 projectile points were found, it is not possible to define the exact site function or period of occupation(s). The following comments should be considered tentative.

It must be noted that the type of quartz identified in the nearby lithic outcrops (Figure 2) was not represented by any of the debitage flakes encountered during the excavations. The preferred lithic type at the site as the South Mountain rhyolite, obtainable within a short distance of the Catoctin Furnace area. Based on these observations, it is unlikely that the aboriginal site at Check 5 was a lithic quarry or workshop.

The lack of ceramics and other evidence of sedentary life indicates that the site was utilized for a limited function, probably as a resource procurement transient camp. It is likely that little or no permanent or semi-permanent structures were erected on site. The period of occupation seems to be prior to the introduction of ceramics in the Frederick County area.

Recommendations:

It is recommended that no further archaeological investigations be considered necessary at Check 5 and that clearance be given for the construction of the proposed highway through the immediate area. A project report will be submitted on this project, it is suggested that this report be circulated to all interested parties.
Excavations at Check 6: Historic Cemetery Site

18 FR 323

Preliminary Report - 1979 Season

In 1977, Orr & Son identified a historic cemetery site (Catoctin Check 6, or 18 FR 323) during their archaeological survey along the proposed right-of-way of U.S. Route 15. In July through September, 1979, excavations were conducted at this site by Mid-Atlantic Archaeological Research, Inc., under the direction of Ronald Thomas and field supervision of Sharon Ann Burnston. (For location of site see Figure 1).

Following clearing of vegetation, efforts were concentrated on the area lying within 165' of the east edge of the present Route 15. This was the area bounded by the then proposed right-of-way of the Route 15 improvements. The site within this area was gridded in 10' intervals and all potential grave-marking stones visible on the surface were numbered and mapped.

Test trenching coupled with excavation of the few clearly visible graves within the right-of-way area enabled the excavators to discern the positioning of the graves within the cemetery (see Figure 2). All burials were found to lie on and east-west axis, with crania to the west. With some notable exceptions, the graves were in north-south rows, spaced roughly at 10' intervals and with an average 4' interval between graves. However, there were some significant exceptions to this pattern, as well as major gaps, wherein graves were predicted but not found. Some graves seemed to have been buried in clusters or groups.

Depths of the burials (as measured from ground surface to top of coffin) varied from 2.4' below surface to 5.1' below surface. This variation roughly coincided with the size of the grave, the smaller graves being shallower. Age and sex distributions within the cemetery appeared to be random. Dates of burials, as determined by artifact analysis, also appeared to be randomly distributed within the limits of the area excavated. A total of 26 graves was excavated. Of the 26 graves, four were marked by headstones, eight by head and footstones, and fourteen by no discernible markers at all.

Some of these grave-markers were found during the course of excavation; they were not visible from the surface and, therefore, had not been numbered or mapped. All the grave-markers were of undressed local stone, mostly quartzite. Most grave-markers showed no retouching or alteration of any kind, however a few had a small ledge or shelf chipped or cut out of one end. No traces of incised or painted inscriptions were visible. Those grave-markers still in situ had been erected to stand on one narrow end and tended to be slightly inclined toward the grave they marked.

Every grave contained a single coffin burial, and coffins generally were of the "pinch-toe" type. The coffins were of simple slat construction. A variety of nails was used (handwrought, machine-cut, and machine-cut with handwrought heads). There were no coffin handles or other such hardware found. The only other "grave goods" were a few undecorated buttons (7 bone, 2 shell, 11 brass,
and 2 white metal) suggesting that at least four individuals had been buried in simple garments, and the remains of 17 cuprous pins suggesting that at least seven other individuals had been buried in shrouds. There was no evidence of jewelry or of other clothing hardware, such as buckles or cobbler's nails (which suggests the absence of shoes). A few fibre fragments found in association with some of the buttons and pins were removed for identification. Traces of floral remains, in the form of flower seeds, were found on or within three of the coffins.

All artifact material found within the graves is consistent with a date range of roughly 1790-1840. There is no discernible pattern of date distributions across the area excavated (see Figure 3).

The individuals had all been buried supine, heads to the west, in extended position with hands folded over the abdomen. The condition of the skeletal remains varied from poor to good. On the basis of field identifications, the few skeletons for whom race was readily discernible (i.e. adults in good condition) appeared to be negroid.

The 26 burials were distributed by age and sex in the following manner:

Feature 1 : sex unknown, infant
Feature 2 : sex unknown, infant
Feature 3 : female, young adult
Feature 4 : male, adult
Feature 5 : sex unknown, child (±4)
Feature 6 : male, adult
Feature 7 : female, elderly
Feature 8 : male, adult
Feature 9 : female?, juvenile (12-16)
Feature 10 : male, young adult
Feature 11 : female?, young adult
Feature 12 : sex unknown, child (6)
Feature 13 : female, juvenile (±12)
Feature 14 : male, adult
Feature 15 : male?, young adult
Feature 16 : sex unknown, child (2)
Feature 17 : sex unknown, child (±6)
Feature 18 : female?, young adult
Feature 19 : sex unknown, child (±3)
Feature 20 : sex unknown, infant (fetus)
Feature 21 : sex unknown, infant
Feature 22 : male, adult
Feature 23 : female, adult
Feature 24 : female, juvenile (teens)
Feature 25 : sex unknown, child
Feature 26 : male, elderly
In summary:

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The failure of the documentary search to produce any evidence regarding this cemetery means that interpretation of the excavated remains will have to depend on analogy, oral history, and extrapolation. Based on preliminary information, consultant Edward F. Heite offers the following hypothesis:

This was a community of thoroughly Christianized negroids. Their burial practices suggest family groupings, which would indicate them to be Episcopalians, Lutherans, Methodists or Baptists (as opposed to the Moravians, who are known to have been proselytizing among the blacks in this area, but who buried their dead segregated by gender and in closely filled rows of graves). The question of the extent of interbreeding with Caucasians is one that perhaps the physical anthropologist's analysis will answer, but the thoroughly Christian pattern of burial suggests a totally acculturated community. Continuity of the community over the time span involved is indicated by the consistency of the burial practices in virtually all particulars.

After excavation, the skeletal remains were removed to the Smithsonian Institution, to be analyzed by the staff of physical anthropologist Dr. Lawrence Angel.

In addition to the excavation and removal of burials, a major research goal was to determine the extent of the cemetery. Consequently, shovel- and back-hoe-dug trenches were excavated and the boundaries of the cemetery roughly located (see Figure 4 a & b).

The trenching confirmed that there were no burials south of grid line N 40 (toward the quarry), and apparently none north of grid line N 80 (i.e. at the edge of the slope toward the pond). The eastern boundary of the cemetery proper lies perhaps 250' east of the eastern edge of the current Route 15, but the area relevant to the archaeological problem is bounded by the new right-of-way. This was resurveyed shortly before the end of the 1979 field season by State Highway Authority engineers, and now lies at 138' east of the eastern edge of the current roadway (i.e. grid line E 138). The western edge of the cemetery, according to Mr. William Renner, was bounded by an old dirt road. Some evidence of this old road may have been discovered west of grid line E 80, in the form of densely
packed earth and a fist-sized lump of slag. At any rate, a backhoe trench confirmed that no graves lay west of this grid line.

Consequently, the archaeological site now has relatively well-defined perimeters. Within the defined area, an estimated 10 - 30 burials still remains to be removed. In the 1980 season, a grade-all will be used to remove the top 18 - 24" of topsoil, in order that the remaining graves may be identified and removed more efficiently. Excavation, recording, and removal of these graves, is expected to follow the standards established during the 1979 season. In addition, the grave-marking stones visible in the part of the cemetery east of the new right-of-way will be numbered and mapped. It is hoped, that retrieval of more burials will not only increase the physical anthropologist's population sample, but will also contribute to an understanding of the social position of this cemetery and the people who used it.
Figure 1: 18 FR 323 Catoctin Check 6 - 1979
Location of site
Figure 2: 18 FR 323 Catoctin Check 6 - 1979
Locations of all burials excavated
Figure 3: 18 FR 323 Catoctin Check 6 - 1979
Distribution of dates of burials
(Dating based on coffin-nail typology)
Excavations at Check 7: "Miner's House"

Preliminary Report

The "Miner's House" is a structure foundation and cellar hole, located south and west of the main furnace complex. The widening of Route 15 will not directly impact the actual structure, as the edge of the right-of-way is delineated by the foundation.

Mitigation archaeology focused on the part of the site west of the structure. The "yard" area was tested to locate features related to the house. Features found during the test phase were investigated in an excavation phase, intended to recover information on the features, the site, and the people who lived at the site.

Test:

The testing was done with a standard post-hole digger of 6" diameter. Test holes were excavated to the subsoil or to the depth of 30". The testing was done on a five foot grid, using the edge of the right-of-way as a base line. Brick bats and/or artifacts were recovered from 14 of the 74 holes excavated.

Excavation:

Excavation of the site was carried out in five foot units on the same grid used in the testing. The units were excavated by natural stratigraphy and the soil was screened through 1/4" hardware cloth. Four major features were uncovered (see Features Plan).

Feature A was a brick sidewalk found along the west edge of the foundation.

Feature B was a subsurface trash deposit. The materials recovered included domestic trash, such as ceramic and glass sherds and faunal remains. Some architectural debris was also recovered in the form of window glass and nails. Preliminary examination indicates that the materials date to the last half of the 19th century.

Feature C was a shallow trench running at a 90° angle to the structure foundation. This feature ended 12' west of the structure. Its function is unknown.

Feature D is a brick slab covered with portland cement. It seems to have functioned as the foundation for an outbuilding, such as a shed.

Other features of note were found in the excavation. Much of the edge of the west foundation of the house was uncovered. In addition, the builder's trench was also excavated. Materials, such as machine-headed cut nails and white ware sherds, indicate that the building was constructed after 1825.

Two postholes were found off the southwest corner of the foundation. The presence of wire nails in the post holes would seem to indicate that the postholes...
were filled in the late 19th or early 20th century.

Part of a test unit excavated during the survey phase of Dr. Orr's investigation was located. The trash pit, referred to by Dr. Orr's report, was not found. However, the top soil across the site contained scattered material. Most of the recovered artifacts seem to date to the early 20th century.

Preliminary analysis of the archaeological data recovered at this site indicates that it was occupied from around 1825 through the early 20th century. Features and materials recovered support the notion of domestic use of the site. Further analysis of the materials found in Feature B, the trash pit, should provide some useful and important insights regarding the occupants. Preliminary findings show that the majority of the ceramic material dates to around the mid-19th century, and may reflect an influx of money into the community at that time, perhaps during the Civil War.
Feature Plan

Miner's House
Check #7

Limit of Excavation

Test pit from site survey

Builders trench → Building Foundation

Post holes

Builder's Trench
Building Foundation

Feature C

Feature D

Feature B

Feature C
Excavations at Check 16: Kunkel Ore Mine and Railroad Tracks

STA. 55–63

Introduction:

An archaeological survey conducted by Orr and Son for the Maryland Department of Highway (1977) at the proposed U.S. Route 15 construction project through the Catoctin Furnace area resulted in the recommendation that further investigations be conducted in the area of the Kunkel Ore Mine railroad tracks. In the Orr and Son report is is stated that the ore-bank is situated one mile north of the Catoctin Furnace. The ore mined from this area was then hauled to the furnace site by railroad along tracks which crossed under the present location of U.S. Route 15 to a terminus on present Route 806, the site of the ore washer and dump. The proposed widening of U.S. Route 15 on the western edge of the existing highway would, it was contended, possibly impact the former railroad bed.

The investigations conducted by Mid-Atlantic Archaeological Research, Inc. (MAAR) at Check 16 were in response to the Orr and Son recommendations (1977). Provided to the investigating team was, among other information, a copy of a map dating to 1911 (Singlewald 1911) which showed the area of the proposed archaeological site investigations. The preliminary survey conducted by Orr and Son appeared to have identified the features shown on the Singlewald map (Figure 1).

Field Investigations:

The MAAR field investigations began and were completed in July of 1979. An extensive pedestrian survey of the surrounding area was conducted and provided the investigators with an understanding of topographical and cultural features in the area (see Figure 2). The survey was conducted on both banks of a stream which crosses under Route 15 and is shown on the Singlewald map. It continued upstream to the ore mine site. No evidence of railroad tracks, road bed or ballast, or railroad-oriented artifacts were found on the surface or in the stream bank cuts. Just above the near vertical stream banks, however, were found flat zones identified in the Orr and Son report (1977) as possible railroad beds.

Large tailings piles are located on the north bank of the stream to the west of U.S. Route 15 and between the highway and the ore mine. The Singlewald map indicates that the railroad was located on this side of the stream although the present configuration and topography would not support this as the actual location of the railroad.

The south side of the same stream, however, had several terraces that were relatively flat and that could be the site of the railroad leading from the Kunkel Ore Mine to the washing area. Five large tailings piles were recorded on this side of the stream above the potential road beds.
Fig. 28. Map of Check 16, Pitzhugh-Kunkel ore banks, located 1 mile north of Catoctin Furnace (Singewald, 1911 map with overlay by Bureau of Soils and Foundations, SHA)
Figure 2: Sketch Map of Check 16
TEST TRENCH #2 PLAN VIEW
MAAR Catoctin Proj.
AREA F.K. LEVEL 11.3

A) ARMS OF ROCK SCANTLY
ASSOCIATED WITH BURGUNDY
GREY CLAY CLAYISH DEPOSITS
(APPEARS TO BE AREA OF
BEDDING STABILIZATION)

APPROX LIMIT OF
BEDDING

GENERAL SOIL DESCRIPTION
FOR THIS SECTION
MIXED CLAYS RANKING FROM
DARK GREENISH-BLACK TO YELLOW BROWN
THE DARKEST AREAS ARE SHAPED
AND CONTACTED BY AREAS OF
COAL, CHARCOAL, LIME AND CLAY
LOCATION OF STONE RETAINING
WALL

ROCK CLUSTERS CONTAIN
QUARTZITE/ROCKS/IRON ORE
BAMBUS AND CORKS
AND MILKY QUARTZ CHUNKS/ROCKS
V-SHAPED SLUMP

PROFESSOR CUT

CLAYISH BODIES IN SOIL FILL PRE-REDDING
MATHIA

GENERAL PLACEMENT
OF ROCK BENDING

GENERAL SOIL DESCRIPTION
FOR THIS SECTION OF TRENCH
MIXED CLAYYISH CLAYS WITH BLACK
GRAY INTRUSIVE CLAYYISH BODIES
FINE GRAIN YELLOWISH-BROWN
WITH SOME MINERAL CONTENT OF
ASH AND COAL AND IRON DEP."
Each of the five tailings piles (Figure 2) contained evidence of their method of formation. Narrow road beds were present on the tops of each leading from the upland side to the tailings edges. All five appeared to have narrow gage wheel ruts apparently due to the use of small horse or mule drawn carts for the dumping of spoils.

Eight post hole tests were excavated on the lowest terrace. Profiles varied greatly suggesting that the area had been filled. The same situation was encountered in post holes excavated to the south on the second terrace. The cores revealed fill consisting of fragments of iron ore, blue clay balls, ash, large rocks and organic material.

Three test trenches were excavated within the area of Check 16 (see Figure 2). The trenches were situated in order to transect the flat areas that had been suggested as possible railroad beds. Two of the trenches were 3' by 25' and the third was aborted short of that length (see Figure 3). In all trenches evidence was found to support the theory that the flat areas were road beds. In one case (Test Trench 1), a ballast network of 100 to 200 pound rocks underlay a cap of yellow and blue clay. The rock strata contained numerous air pockets since the clay caps prevented sediments from reaching the strata. These prepared road beds were used by wheeled carts with narrow wheel bases, as indicated by observed ruts.

The only artifacts recovered during the excavations were a cast iron fragment and a single railroad spike. Both were within Test Trench 1 in a wheel rut.

Summary:

It is not possible, on the basis of the archaeological investigations, to verify the Singlewald map or to state that the Kunkel Ore Mine was serviced by a railroad. Based on the test trench observations, it is likely that the mine was serviced by wheeled vehicles, probably mule-drawn carts. Tailings piles were created by the dumping of spoil from wheeled vehicles of similar configuration (wheel bases). Excavations revealed that the entire area of Check 16 has been extensively modified. It is likely that the entire topography of the area is due to mining operations.

Recommendations:

It is recommended that an area closer upstream and towards the Kunkel Ore Mine as well as another east of U.S. Route 15 be investigated archaeologically in order to determine if the Singlewald map (1911) is correct. The area of Check 16 has been so extensively disturbed that evidence may no longer be intact. No further investigations within the U.S. Route 15 project ROW are necessary at Check 16.
PART 4

AN INTERIM REPORT

OF

CHECK 4. THE SPRING-BATHHOUSE (18FR321)
CHECK 9. LIMESTONE QUARRY (18FR325)
CHECK 10. EXHUMED CEMETERY (18FR326)
CHECK 11. RACE POND (18FR327)
CHECK 12. IRON MINES AND CHARCOAL ROAD (18FR328)
CHECK 15. ORE RAILROAD
CHECK 17. RACEWAY (18FR331)
CHECK 19. LIMESTONE QUARRY AND KILN (18FR332)

TEAM C. ORR AND SON
PART 4
LIST OF ILLUSTRATIONS

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PRELIMINARY REPORT
CHECK 4. BATH AND SPRING HOUSE
(18FR321)

Research Design

The Check 4 area research design underwent some changes as the result of excavations and the recommendations of the Advisory Panel of the project. The original plan to salvage the stones of Feature 1, the Bathhouse for possible reconstruction was abandoned due to the quantity and complexity of the remains. In its place a plan to "monitorize" the feature for future excavation when the highway had ceased to exist. This consisted of carefully excavating, measuring and recording the remains; and packing the site in sand, preparatory to reexcavation at which time the effect of the road (vibration, compaction, chemical changes, etc.) could be assessed. (Orr et al., July 1979, pp. 19-23).

As the raceway feature, originally part of the Check 4 complex, increased in scope and complexity, it was seen as desirable to extend Check 17 as a linear area to the perimeters of Check 3, iron-working site to the South. Also, as a result of excavation and oral history studies the Spring site (Feature 2) was recognized as a recent feature constructed by the Trefault family to assist in their goldfish hatchery in the 1920's.

The Bathhouse site (Feature 1) was discovered to have an early level at which time it was a springhouse. Additional time and effort had to be allocated to accommodate this turn of events. On the other hand the search for pathways to and from the feature proved less rewarding than expected, with the exception of the area directly around the bathhouse. Interior drainage problems both faced by the original builders and the archaeologists proved more complex and pressing than visualized – as the site was situated on a spring. Finally, quantities of ceramic artifacts, also not anticipated but very welcome were found associated with the site features.

The 1979 Excavation (Fig. 2, 12)

Exterior of Feature 1, Spring-Bathhouse.

Four test trenches were placed at the corners of the feature.
The trenches were dug to the subsoil, perpendicular to the walls, then expanded to explore up to half the entire length of each wall. In addition, two pathway trenches were dug, exposing the area immediately in front of the doorway, and in a likely area 8 feet east of the southeast corner. Here a pathway, bowl-shaped and 4 foot wide, was discovered leading in a southerly direction. The pressing time factor and overburden of stones and debris in the general area did not allow for further excavation of pathways.

The oral history note that slave women heated water in a large kettle for the baths of the women of Auburn House and the Iron Master's Cottage got some support with the discovery of charcoal fragments near the front door and behind the opposite wall. Here an iron pipe with screwed on elbow joint was found. Oral history suggests that this was part of a ram jet pump which sent water up to the Auburn House, and also that it brought water down for the bathing from the raceway, located a few dozen feet to the West. The pipe, non-committally, was found extending to the raceway stone wall - which also pointed in the direction of the Auburn House.

Two well-defined builder's trenches were found along the North and east walls. These were evidenced as thin bands of discolored soil indicating that the foundation stones had been laid up against the subsoil loosely here. In the north wall builders trench large stones and mixed clay fill had been dumped in an effort to divert the spring water located at subsoil level. The cultural material from the builder's trenches consisted of several dozen redware sherds identified by Ms. Betty Cousens, our Ceramist, as local wares. A Makley pottery works located outside Thurmont made such pottery. The Makley family will be interviewed in the Oral History program now proposed to assist in identifying the function and time period of the redware (which cannot be identified by other means). Half a dozen blue transfer prints and shell edge pearlware sherds also came from the builder's trenches. Other find included several dozen cut nails of various sizes and a few wrought iron ones, brick fragments, an iron casting sprue or gate (by-product of a casting mold), a curved piece of thin iron of unknown use, and numerous small grey and shiny slag fragments. These and other similar materials found in the east and north wall trenches appeared to indicate a time period from the early to the middle 19th Century.

**Interior of Feature 1, Spring-Bathhouse.**

After clearing away the overburden of humus, wall stones, and wall plaster, flagstones were revealed forming a floor. The
The flagstones one to two feet wide and two to three feet long were extraordinarily thick (5-6 inches) and weighed from 50 to 150 pounds. A two-foot square metal basin occupied the southeast corner of the floor to a depth of 29 inches below the floor level. The basin was filled with water and functioned as a catchment basin being fed by a channel which funneled spring water from an iron-grated square hole in the west wall. A similar opening also grated with pointed iron "teeth" was opposite the basin allowing egress for the constant supply of spring water.

Wooden boards were seen on the western edge of this basin extending underneath the flagstone floor. In order to explore this lower level the floor stones along the north and west walls were taken up in a two-three foot wide L-shaped trench. A foot-thick layer of dark soil mixed with numerous brick fragments and bats, as well as glass fragments and sherds, intervened between the two levels. At this bottom of this dark fill was a thin, sandy silt layer (¼ to ½ inch thick) covering 1 inch-thick wooden boards. The boards were partly deteriorated. They were one foot wide and were lined up two abreast running parallel to the north and west walls. Evidence that these were trough boards was found in three corners of Feature 1. Here several vertical wooden edges 2-4 inches high indicated their function in channeling the spring water which continually flowed from the ground. A test pit in the interior of the floor showed that the trough boards did not extend over the entire floor but hugged the edges. This test pit revealed a sandy layer several inches thick located a foot below the flagstone floor and containing an occasional brick and many brick fragments. This pointed to the presence of a coursed brick floor at the wooden trough level - the first floor for the springhouse. Underlying the sandy zone was a thin layer of slag similar to that found in the builder's trenches. In the test opposite the front door bricks were found resting on the dark fill area. This indicated a probable step which had been put in, on second thought, over a non-functioning wooden trough board.

In the process of removing sections of the stone floor, a 10 to 12 foot long double tiered two-abreast row of bricks was found in the underlying clay layer. It stretched, in a Y-shape, from the middle of the west wall diagonally to the metal catch-basin in the northeast corner of Feature 1. The Y opening was adjacent to the opening with the pointed iron "teeth" noted above. A square metal pipe ½-1 inch thick was discovered at the base of the catch basin. This pipe, over 2 feet long, exited through the stone
wall into an outside piled-stone drain that ran underground toward the stream located 10-15 feet north of Feature 1. This appeared to be an elaborate drainage system to channel water outside of the house.

Oral history has identified a large bathtub (wooden, plaster or both) said to have occupied the southwest corner. A pipe hole was found beneath the stone floor, and near by, paralleling the west wall below the flagstone floor but above the wooden trough was an iron pipe 4 inches in diameter and 4+ feet long. The pipe end coincided with the entrance of the brick drain and could possibly have acted as a drain for water either originating at the spring or somehow flowing out of the bath tub.* Ladies from the Auburn Mansion and perhaps elsewhere, according to oral history bathed here only in the summer. There was certainly no evidence of interior heating. It is easy to surmise that they partook of light refreshments as suggested by the china cup and smaller sherds found on the bathhouse floor.

Summary

Phase 1, the Pre-Occupation Period.

Before the Spring-bathhouse was built this was a gently sloping spring area. It was probably used as a spring area due to its proximity to the iron-working area directly to the south. A sprue or gate from a casting house and furnace tailings at the top of subsoil zone may come from the late 18th century site.

Phase 2, The Springhouse Period.

Construction started in the early 19th century when pearlware, with transfer prints and blue and green shell edges, as well as cut nails were well established as common artifacts. The springhouse may have been built about the same time as the Auburn Mansion with which it is associated in oral history (1803). The mansion, home of the furnace owners, was located on the same property a few hundred feet to the west. A variety of crockery sherds found associated with the spring water troughs and catchment basin indicated its use as a refrigeration for foods. Ms. Betty Cousens, ceramist of the project, found the pottery associated with the springhouse period to have a preponderance of sherds between the time period of 1820-60. A land record of 1858 (Frederick Co. Courthouse Liber BGF 3 F312) recording a survey made for Mr. Fitzhugh and the bearing of Dr. Wm. S. McPherson of the "Old Forge" area mentions "bank of race, springhouse and spring" and locates their bearings.

* Or support of the drain.
Phase 3, the Bathhouse Period.

The troughs and floor of the springhouse were covered by a new floor when it was made into a bathhouse. One reason for terminating the Springhouse may have been technological with the increased use of pond ice for refrigeration. Secondly, there is a springhouse which is much smaller and closer to the mansion. Bathing spas were also increasingly popular in the late 19th century and the idea of a special house for women's bathing would have been considered fashionable. Two informants saw the tub used for the bathing in situ but were unable to agree on its description.

Phase 4, Disintegration Period.

According to oral history indoor plumbing came to Auburn Mansion in 1915. It was no longer necessary to bath in the bathhouse and it fell into disuse. The walls were torn down to provide stones for the wall of a nearby driveway.

Associated Features.

The raceway wall which forms a backdrop for the bathhouse and supports the 20 foot-wide raceway structure came in at the time of the building of the Auburn Dam for which it supplied water. This was probably in the earlier part of the 19th century.

The present spring had been constructed in a square shape with a cement box enclosing the spring in the 1920's. It was probably an enlargement of an earlier spring mentioned in the 1858 document cited above.

Conclusions

The 1979 excavation was sufficiently extensive to give a comprehensive view of the archaeological situation at the Check 4 area. Fully 50% of the site was excavated with 400 bags of artifact fragments collected. The stratigraphic complexity of the site was thoroughly studied and the sequence of events appreciated. In order to realize fully the value of this site, additional oral history studies and land record analyses are being proposed. To complete the monitorization of the site an overflow trench is needed carrying away the spring water from the site.
PRELIMINARY REPORT
CHECK 9. LIMESTONE QUARRY
(18FR325)

Research Design

The objective was to mitigate the effect of the impact from road construction on this small limestone quarry site. A partially exposed limestone outcrop was faced by a 40x40' box-like depression approached by a 12 foot ramp. It was planned to excavate up against the outcrop to get information on the techniques used in mining, and hence an idea of the purpose of the mining. A second purpose was the chronological position of the quarry. A backhoe dug an irregular trench across the face of the outcrop.

The 1979 Excavation (Fig. 3)

The base of the backhoe trench was approximately 6 feet below the surface of the open pit depression, itself some 7 feet below the surrounding surface of the ground. Quantities of limestone chips 6-12 inches in diameter and smaller came from the lower level of the trench. These chips had obviously been produced by the use of an iron hammer or maul on the outcrop. Quantities of green bottle glass, a three legged iron pot, and a battered liquid container with a small spout (kerosine tin?) were found along with a number of faggots of charcoal. In the 1977 survey refuse soil with small chips of limestone were found overlaying the burial ground (Check 6) directly to the north. At this time burial stones were found (2) keeled over as it were by a horse-drawn slip - the probable method of excavating the quarry pit.

Interpretation

1. The limestone quarry was an experiment to get limestone for use as flux in the Catoctin furnace. Larger pieces of the crushed limestone, mauled from the outcrop, were removed for this purpose, and the debris scattered over the nearby ground.
2. The miners ate their lunches in and around the depression leaving charred wood, iron pot, and bottle fragments. Kerosine was used to start the fires. These artifacts appear to be in the style of the late 19th century.

3. Only a few feet of outcrop was removed. The quarry was probably abandoned due to the lack of suitable quality limestone. In the 1977 survey Dr. Fauth, geologist of the project, reported that the limestone appeared to have numerous impurities - and that this made it undesirable as a flux ingredient in the furnaces.

Conclusions

Sufficient excavation was done here to gain the essential facts about the site and to interpret the site as an aborted limestone quarry originally opened in search of flux for the iron-making process. The site is next to Check 8, presumed silver mine which was interpreted to be also a test excavation - looking for iron ore. Oral History informs us that in the last days of the furnace considerable testing for ingredients to use in the furnaces took place. (Orr and Orr, 1977, pp. 40 et seq.)
CHECK 10. EXHUMED CEMETERY (18FR326)

This site was an exhumed cemetery removed by SHA right of way personnel a few years ago. It contained bodies of perhaps a dozen burials and a headstone bearing the date "1787". On the assumption that other burials might still be present the site was included in the 1979 excavations. It was learned, however, that burial grounds per se including this one did not qualify as historic monuments unless famous personages were buried there. However, it was also indicated that if there appeared to be a possibility that burials were still to be encountered there and if they would be disturbed by the road construction that excavation could proceed. The State Archaeologist and the Project Director visited the site and determined that the site resembled typical family burial ground. One measuring about 20 by 15 feet and surrounded by an iron fence occurred a mile south and on the west side of the road (well clear of the road construction). It was also determined that the impact would not disturb the soil deeply enough to encounter any remaining skeletons. With this information it was decided not to excavate the site. Request had been previously made to utilize the funds allocated for this site on other sites of the project.
PRELIMINARY REPORT
CHECK 11. RACE POND (18FR327)

Research Design

The Race Pond was recognized as a major feature in the hydrologic power system of Catoctin Furnace. Research was designed to explore the origins, functions and dimensions of the original pond, now partly buried under the existing route 15. The investigation was to be accomplished by a series of borings drilled by the SHA Bureau of Soils and Foundations and by excavations undertaken by the Consultant's team (Team C). The objective was to reconstruct to the degree possible the functions and capacities of the pond (Orr et al., July 1979, pp. 29-31).

The 1979 Research Project (Fig. 4)

Borings. Eleven borings were taken from the area and are now being examined by Dr. John Fauth and Dr. Jonathan Harrington, State University of New York/Cortland. The information concerns the nature of the subsurface structures and the spore content of the organic strata. Preliminary data suggests an original iron ore mine with some midden debris overlaid with a muck strata of the pond.

Excavations. Eight trenches were excavated in the area of the pond and one large trench (Check 12, Feature 5) excavated at mouth of the pond. The trenches at the edge of the pond (Trenches 5 and 9) contained deposits of grey clay and soil. The trench within the pond area contained a black muck zone overlaid by a red clay strata which had been constructed as part of the shoulder of the existing U.S. Route 15. Excavations on the knoll to the north of the pond (Trenches 7, 8, 10 and testpit 1) contained cultural debris including tailings from a furnace area and a few pottery sherds. A mound, six feet high and 30 feet in diameter (Trench 6) revealed stream stones and sand dug from the ditch which connected the pond to the stream. The raceway excavation (Check 12, Feature 5) had a lower raceway with retaining walls, and an upper raceway also with its retaining walls. The higher raceway was cut through a terrace containing tailings from a furnace.
Observations. Observations were made on features outside of the Check 11 right of way area of SHA alignment construction but related to an understanding of the impacted archaeological features. These included:

1. Post-furnace features constructed by Lanceolot Jacques, owner and real estate developer of the Catoctin Furnace area during the 1920's. These included: cemented dam and intake valve for bringing Little Hunting Creek water into the race pond; the use of race pond water to create lakes in adjacent iron mine cavities (Check 12, Features 1 and 2), part of a "deer park".

2. The remnant of an old raceway believed to have been the course through which water from the creek was brought from a mill pond behind a dam in the creek. This was the route used by Jacques later.--after the time period of the furnace, leading off from the iron water valve.

3. A large barrage located approximately one-third mile upstream from the race pond and connected to a raceway which extended southeast toward the Auburn iron-working area. This is thought to be the water power system prior to the use of that in the Check 11 area.

4. Observations of the spring area to north of the pond which feeds the remnant of the pond today, but was obviously insufficient to provide the volume of water necessary for the furnace hydraulic power system.

5. Identification of a probable old road leading into the original mine area of the site.

These observations were greatly aided by oral history studies.

Interpretations

Phase 1. The lower raceway of Check 12, Feature 5 trench was probably the original route of water power supplying the furnace Stack #1

Phase 2. Iron mine encroaches on raceway area. Wooden aqueduct, remnant of which is reported by oral history and observed by William Renner, probably carried water across mine area.

Phase 3. Water fills excavated iron mine cavity and resultant pond used for ore washing of nearby iron mines.

Phase 4. Probably co-eval will Phase 3 the pond was used as an auxiliary mill pond with tailrace raised to accommodate a higher water level. The main mill pond was the dammed creek itself.
Phase 5. Post furnace period. Water of pond used to supply "deer park" lakes.

Phase 6. Pond used for raising fish and for fishing.
Phase 7. Partially filled in during construction of existing Rt.15.

Interpretations regarding capacity of the pond as an auxiliary mill pond of the power system awaits boring project information now being studied at SUNY/Cortland. The large ditch connecting the north end of the pond with the creek was dug by SHA in 1960 as a drain.

Conclusions

It is believed that an adequate effort has been made in excavation and core-drilling to realize the archaeological situation of the impacted area. However, it is believed that an organized oral history program and land records project such as proposed will greatly strengthen the interpretations of the findings and increase the probability of arriving at historical facts. The final report will similarly depend on the marshalling of all of the facts of the Catoctin Furnace site including the completion of Checks 3 (iron-working area) and 6, burial ground.
PRELIMINARY REPORT
CHECK 12: IRON ORE MINES AND CHARCOAL ROAD
(18FR325).

Check 12 includes three mines (Features 1, 2, and 4) and a Charcoal Road. Feature 5, a raceway which carried water from the Race Pond belongs with Check 11. Feature 3, another mine, is outside the area of Alignment 1 construction; (Figs. 6-10)

Research Design

The purpose of the research was to learn as much as possible about the features within the construction area before further impaction. Feature 1 will lose 10 feet from the top strata of the mine. Features 2 and 4 are mines almost completely covered by the existing U.S. Route 15 but will lose a bit more of their sides. The Charcoal Road through which Route 15 plowed through will lose another 75 feet. The mines required excavation and/or borings to reveal the configuration of the open pit, now completely covered. In this process, Feature 1 offered the chance to study the manner in which the ore was extracted, as well as its placement in relationship to the other natural stratigraphy as was the case with the other two mines. Oral history depicts the manner in which the charcoal-bearing wagons would come down the fanned-out charcoal trails to the main Charcoal Road; ring a bell in a tall sycamore to summon the charcoal weigher; then, depositing their charcoal faggots in the Charcoal House at the Furnace; and return to their kilns along the same route - trailing charcoal dust. Backhoe-cut trenches were cut into the terrace on which the road ran, and along with careful hand excavation of the road surfaces unfolded clues supporting the image of the events of the past which still survived as memories.

Nineteen borings were located in Features 2 and 4 strategically by Dr. Fauth who is currently analysing the samples recently shipped to SUNY/Courtland Department of Geology. (Orr et al, July 1979, pp. 32-36)

- 12 -
The Iron Ore Mines.

Feature 1, Box Mine. The original test trenches (Orr and Son, August, 1977, pp. 50-59) were enlarged and deepened revealing undisturbed natural strata on the sides of the box-like depression. Approximately ten feet of soil fill (clay and loam with fragments of iron ore) resulting from the mining operations occupied the box mine. The base of the mine excavations was fully ten feet below the present surface where a yellow soil marked the end of a layer of iron ore which was being mined. Six split rails sharpened and used as stakes were found at the bottom level along with a six-foot long squared beam containing large square spikes of iron and showing evidence of rope-wear in the middle. The fill layers were alternately thick bands of grey clay loosely consolidated and brown soil. The top layer of the fill was composed of numerous bands of soil and clay in a zone some 6-12 inches in thickness. These trenches are designated Feature 1A.

Feature 1B is the squared banks of the mine at the west end of the pit where the rising side of the mountain terminated the mining operation. An L-shaped trench was cut here to a depth of 5 feet with a backhoe. Natural strata consisting of gray clay and brown soil were encountered in the sides, and the loose fill of these strata found at the base of the excavation. A number of test pits were placed in the area between Feature 1A and 1B. In each case fill similar to that described for the upper layer of Feature 1A was found. These strata dug to a depth of 3 feet were screened (1/2 inch mesh). No artifacts were found but quantities of cinders, typical of furnace tailing occurred. (Appendix A, Fig. 2)

Feature 2. Mine. Two backhoe trenches were cut into the banks of this mine, the greater part of which is covered by the existing Route 15. Trench 1, placed in a hillock adjacent to the Catoctin Hollow road, was cut with a backhoe for a distance of 25 feet. Natural strata including a thick zone of iron-bearing concretions were encountered. The concretions were considered to contain a sufficiently large concentration of iron to have been mined. The base of cut unearthed slabs of concrete extending to an unknown depth. Trench 2 was a similar cut placed in a mound some 15 feet high and 150 feet long occupying the center of the mine surface. No iron ore or cultural features were found in its brown beam strata. Twelve borings drilled into the mine are now being analysed at SUNY/Courtland. (Appendix A, Fig. 4-1,2)
Feature 4, Mine. This mine, almost completely covered by Route 15, was revealed by an "as is" north-south profile mapped prior to the construction of the road (SHA Bureau of Design Map, 3/62; Sheet 17 of 31). Here a depression is seen 350 feet long and 30 feet deep. Attempts to use a backhoe to explore the mine strata were thwarted due to the steepness of the road embankments against the sides of the mine. A trench was cut in the vertical face of the Charcoal Road site at the north end of the mine, but no iron-ore was seen. A surface search by Dr. Fauth, our geologist, revealed iron ore nuggets at various levels of the mine. Two iron rails were found, one twisted badly, at the juncture of the mine wall and the road embankment. Seven borings were drilled in the mine area and are now being examined.

Interpretations. The mines Features 2 and 4 are probably those described by geologist Singewald following his 1911 examination of the Catocin Iron Industry then almost defunct. (Singewald, 1911). A third mine was described in the area of these two. That mine is believed to be the Big Ore Bank now a pond and outside the area of Alignment 1 construction (Orr and Son, August 1977, Check 13, Fig: 60).

Feature 1, box mine, represented an exploration for iron ore made from Feature 2, mine. This mine was dug following the iron ore strata and avoiding sterile zones such as the large island of sterile strata explored by Trench 2:Feature 2. A "rabbit warren" pattern of mine excavation resulted. This is seen also in the Check 11, Race Pond, area where another "island" occurred as a result of a limestone outcrop. Feature 3, mine, not investigated since it is outside of construction area represented a continuation of Feature 2 mine probably underneath the raceway which was carried by a wooden aqueduct at this point. A similar device for the raceway over the race pond mine is hypothesized.

A model for the mining of open pits in the period represented by Feature 2 mine, and by inference Feature 3 and the race pond mine, is suggested by the data of Feature 1, box mine. When considered with the presumed picture of a later period mine—the Big Ore Bank mine (Contract Archaeology, Inc. 1971, Plate 4A). This is visualized as a Middle Period mine lacking steam equipment and iron rails for the ore carts:

1. Dig a squared face 40–50 feet wide and half as deep.
2. Proceed to dig forward by throwing non-ore soil to the rear and side and ore fragments into ore carts. Ore carts probably on sleds with furnace tailings used to give prepared surface. Because of softness of clay/loam soil sleds are visualized.

3. A wide step platform gradually lowered to base of mine (e.g. base of iron ore vein) results from this process. The sides are shorn up by the use of squared timbers held in tier positions by perpendicular split-rail stakes.

4. The total face is kept parallel and on the same plane by alternately digging adjacent 50 x 25 foot sections.

5. The vein of iron-ore is followed with sterile areas avoided. The digging stops when the overburden, as in a steeply rising mountain side is encountered, becomes too great, or the vein goes too deeply into the ground water. Ground water is kept drained by ditches, but excavation could not proceed as deeply as it later did with steam pumps.

Feature 4 mine is considered to belong to the later complex of mines including the Big Ore Bank and Fitzhugh-Kunkel mine because of its greater depth and presence of iron rails.

An idea of the amount of iron ore in Feature 1, box mine is gained by comparing the amount of fill left in the "box". This amount to one-third to one-half of the total, original volume. Much of the ore taken from the mine contained soil which was washed off at the washer pond at Check 11, Race Pond. A comparison of the iron-bearing strata to non-iron bearing suggests that about one-fourth of the total soil contained iron ore. (Orr and Son, August 1977, Fig. 19)

Feature 6, The Charcoal Road.

Trench 1. A backhoe trench was cut directly across the road revealing a thick zone of grey slag which covered the north side of the upper terrace. A layer of gravel was found just under the surface. The gravel formed a strip some 15 feet wide which contained ruts, extending "6-10" into the ground and filled with gravel. The graveled strip overlay a thick band of powdered charcoal which was resting on a band of red gravel from furnace tailings. It had a set of ruts of its own about wagon axil distance apart. These features in turn rested on a grey clay fill which resembled the soil resulting from ore washings. A thin zone of green slag intervened between the grey slag mantle and the fill. Wagon parts, brake handle and bar, came from the green slag zone.
Trench 2. A trench similar to Trench 1 above was cut into a
terrace located approximately 7 feet below the upper terrace and
directly to the south. The trench contained three charcoal features
similar to that described in Trench 1. Each was similarly under-
pinned by washer soil debris. Two, located on the terrace proper
were about 12 feet in width. The third was part of a feature loca-
ted on the upper terrace. All rested on the same kind of fill.
A wagon spring came from the charcoal of one of the features.

Trench 3. A backhoe cut produced a nearly vertical trench
at the edge of the terrace and next to Trench 1. It was excavated
to a distance of about 12 vertical feet to the floor of Feature 4,
mine. A thick mantle of charcoal draped over the side of the
terrace. The grey clay fill proceeded to a light yellow subsoil
near the base of the cut.

Grid 1. A 5 foot grid was placed over the gravel and charcoal
areas at the surface of the upper terrace and excavated by hand.
A brass fountain pen and fragments of bottle glass came from the
gravel area. An aluminum key was found above the gravel. Two wide
ruts were discovered in the charcoal layer.

Test pits and post holes. A series of test pits and postholes
were put into the upper terrace surface for a distance of several
feet. Alternate layers of powdered charcoal were found.

Observations. On the west side of Route 15 some 500 feet up
the mountain four roads or trails were found ranging in size from
10 to 12 feet in width and a few feet deep. The trails appeared to
converge on a line made by the extension of the charcoal road.

Interpretations.

1. The upper terrace, measuring 50 feet wide and 8-10 feet
in thickness, was built of ore washings for the purpose of conveying
charcoal in wagons from the charcoal hearths on the mountain to
the furnace of Stack #1 located directly to the East.

2. The converging trails on the mountain led to charcoal hearths
where individuals rendered wood cut from the forest into the fuel.
(see charcoal trails exhibits in Catoctin Mt. National Park)

3. The charcoal roads were marked by red furnace gravel, ore wash
mantles put down to support the wagon wheels. The roads and
adjacent areas were covered with charcoal dust which came from the
emptied wagons as they returned to the mountain hearths.
4. The mountain trails converging on a projection of the Charcoal Road probably led into successively smaller trails terminating at the charcoal hearth areas.

5. As the demand for charcoal grew with the expansion of the iron industry at Catoctin Furnace a second terrace to the south of the first was added. This terrace contained two charcoal roads corresponding to the two roads found on the upper terrace - one for coming and one for going. The upper terrace was constructed probably in the latter part of the 18th century, and the lower road in the middle of the 19th century when the construction of Stack #2, another charcoal blast furnace, and the Charcoal House located on the center of the retaining wall of the furnace, took place. (Contract Archaeology, Inc. 1971, foldout map)

6. The charcoal road was probably in use as such until the late 19th century. The last charcoal furnace was discontinued in 1893.

7. A "dirt and stone public road" partly coinciding with the charcoal road was in use in the early 1960's. Part of this road with early 20th century artifacts in association was excavated. It is believed that the grey slag veneer on the side of the original terrace was placed there as a shoulder for the public road. The gravel of the road is known as "crusher-run" gravel and is dated in the late 1800's. The grey slag is associated with Stack 3. (SHA Bureau of Design Map, as built revisions 2/17/64, Sheet 18A of 31)

Conclusions

It is believed that the excavations, borings, and observations of this site satisfy the data requirements for the mitigation of the impacted sites. It must be stressed, however, that additional oral history and land records data is required to attempt to substantiate the interpretations of these data (see extension program).
CHECK 15. ORE RAILROAD
(18FR329)

The original Check 15 of the intensive survey included most of the washer pond and ramp (Orr and Son, 1977, pp.60-73). When it was required to bring the Alignment 1 nearer to the existing Route 15 in the area of Check 15 only a small part of the original check area remained within the area of construction for dualization. The surviving area measuring some 250 by 25 feet, contained the outlet stream from the flooded Big Ore Bank mine (Check 13), a portion of the ore railroad area, and an abandoned ore cart lying on its side in the stream.

Research Design

The basic objective of the investigation was to get as much information about the ore transportation system as possible within the confines of the recent right of way. This involved excavating the ore cart and searching the stream for additional equipment which may have been abandoned. Test pits and trenches were planned for the area adjacent to the stream in search of possible railroad tracks.

The 1979 Excavations (Fig. 11)

The Ore Buggy and the Stream.

The cart was lying on its side with two axils, lacking wheels, and exposed above the stream soil to show 8 inches of badly weathered iron bars. When the cart was excavated from the stream it was found that the wheels had been removed from the other side also. The buried axil parts showed no rusting. Each axil was 48 inches in length and was attached by bolts and cleats to heavy square beams measuring 68 inches lengthwise and 34 inches across. Some of the beams still had red paint on them. The stream, which connected the flooded ore mine with the washer pond, was explored for approximately 30 feet on each side but no artifacts were found.

Test Excavations

A series of tests and trenches were placed at intervals of 10 feet along the bank of the stream in search of evidence of the
ore railroad, but subsoil was found in each test directly underneath a thin humus. It is believed that the railroad did come out of the mine and convey carts, drawn by mules, up the ramp to the south. A rail had been found upright at the end of the ramp and another rail reported found on the ramp (Orr and Son, 1977, pp. 64-65). A depressed area 6 feet wide, railway tie spike, and a broadaxe were also reported found earlier. It is probable that the rails and ties had been removed earlier. It is also probable that the ramp platform was changing constantly due to the addition of soil from the ore washings and that the tracks and ties were themselves in a sense portable and had left no permanent mark.

Observations.

It was noted that 220 feet east of Station 562 a square made of stones measuring 10 feet on a side were seen on the south bank of the raceway. Similar stones were noted on the north side of the raceway also. It is believed that these stones made an abuttment or base for a bridge over which the cars would go in returning from the ore washer ramp to the furnace area.

Interpretation

1. The ore cart is similar to that dredged from the Big Ore Bank Pond by Mr. Charles Sandy, superintendent of the Cunningham Falls State Park a few years ago. The wheels on Sandy's cart were dated 1871 and 1872. The vehicle depicted was similar to that shown drawn by mules in a picture reported to have been taken of the Big Ore Bank mine prior to its flooding in 1903. Such carts had large boxes for containing the ore mounted on a free spinning iron wheel. The rails found by Sandy had round (not flat) rail tops.

2. The railroad section which was outgoing to the ramp does not appear to have left evidence of its presence which could be recognized within the right of way area.

3. The railroad route returning from the ramp with cleaned ore enroute to the furnaces undoubtedly passed over a bridge spanning the raceway and indicated by a prepared base of stones.

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PRELIMINARY REPORT
CHECK 17, RACEWAYS
(18FR331)

Research Design

The original research design for the raceway features in Checks 4 and 17, while essentially correct in conception, proved insufficient in scope (Orr et al., July 1979, Figs. 5, 11). The six small trenches called for in the plans became eight large trenches and several smaller trenches and test pits as the excavation proceeded. Instead of one raceway system, at least two materialized. The unexpectedly large size of the raceway cross-section was the cause of the miscalculation. This was only determined by extensive excavation. As the dig proceeded, the SHA backhoe in expert hands proved adequate to the enlarged task.

The objectives of the research remained the same as originally conceived namely to understand the form and function of the raceways and their interrelations with those discovered in other areas. The basic technological questions remained constant involving water source, flow volume and velocity for providing water power to produce the air blasts for the furnaces, to grind, saw, and hammer in the grist, lumber, and paint mills of the Catoctin industrial complex.

Land records research, started as a volunteer activity by Mrs. Marie Burns of the Catoctin Furnace Historical Society, proved invaluable in providing locations for and data concerning the raceways and their water rights. The potential of oral history has also been felt in pointing out the several water power systems in operation during the long period the site was in operation.

The 1979 Excavations (Fig. 12-15)

Trench 6

This backhoe trench was cut into the north end of Auburn Dam where the raceway from the North runs into the dam. Feature 2 was found directly in line with the course of the raceway. It was a low truncated pyramid topped (under a thin humus) by a thick clay lens which rested on several layers of soil and furnace tailings.
Dark organic muck flanked the feature on the east and lapped up the side of the dam bank. The bank was a mound of loam soil built on a thick base of furnace tailings. An iron clasp knife with a tortoise shell veneer handle came from the top of the tailings.

Feature 1 is a semi-circular pit located under Feature 2 and proceeding over 15 feet to the West, under the red fill of the SHA shoulder for existing Route 15. The basic soil in the pit is a dark, organic muck.

**Interpretations.** Feature 2 is the terminal area of the raceway extending from the North and to which Trenches 2 and 3, and Test pits 1-3 belong. This hydraulic system, designated as System B provides water for the Auburn Dam. Ordinarily characterized by a superordinate, slightly convex basin of clay measuring 15 feet by 1½ feet, Feature 2 is thinner and smaller and was under the waters of the dam. Feature 1 belongs to the hydraulic System A involving the raceways in Trenches 4, 6 and 7. The raceway of System A comes from the uphill area to the northwest of System B.

_Trenches 2 and 3_ (App.A, Fig.1) Two long and deep backhoe trenches explored a road-like feature with flanking retaining wall which manifested several hundred feet north of the entrance to the Auburn Dam. The trenches revealed a feature (Feature 1 in each case) with similar construction characteristics leaving no doubt that the two features represented the same complex. In each case a profile had been cut into the natural strata of the hill side and the dug earth piled directly to the East of the cut. Trench 1 contains more stones than Trench 4 as a result of the excavation but the result is the same - buttressing on the East of a roughly U-shaped cut some 6 feet deep. The cut was then filled with seven or more horizontal superimposed layers of furnace tailings, clay and sand. These layers supported the clay basin (15 feet by 1½ feet) and slightly convex which conveyed water. The uphill side of the complex was supported by a retaining wall of loose stones a few feet high. Iron fragments and a few ceramic pieces, mainly redware, came from the supporting horizontal strata. An extraordinary find consisted of 3 identical pieces of grey, salt-glaze, "German" ware one pieces of which bore the same of "Myers". One sherd came from the bottom horizontal layer, one from the clay basin, and the third sherd came from between the stones of the retaining wall.

**Test Pits 1-3.** Test pits indicated the continuity of the raceway supported by a high retaining wall in the area of Check 4.
**Interpretation.** The strata of Trenches 1, 2, and Pits 1-3 are of the raceway of hydraulic System B which conveyed water in a wide clay basin to the Auburn Dam.

**Trench 4.**

This backhoe trench was cut into the Auburn Dam floor in an east-west direction. It revealed two main features consisting of superimposed bowls in which Feature 2 was inside Feature 1. Feature 1 contained yellow sand strata, and Feature 2 was a dark, organic soil. Feature 1 had been cut into the red Triassic geological period red clay which underlies the area and was used for construction purposes by both the Catoctin Furnace buildings and the Maryland State Highway Administration in the construction of existing Route 15.

**Interpretation.** Similar to the characteristics of Feature 1, Trench 1 described above, Features 1 and 2 of this trench represented a raceway of the hydraulic System A. The raceway appears to have had two phases - the original and early phase seen in Feature 1 and the late phase in which the raceway was finally filled up with mucks seen in Feature 2.

**Trench 5.**

This is a trench cut into the shallow gumbo and sand strata of Auburn Dam on the East and a feature consisting of horizontal clay and sand strata on the West of unknown function which disappeared under the existing road.

**Interpretation.** No evidence of the raceway was seen at this point. It is possible that the raceway connecting that feature in Trenches 4 and 6 had been removed.

**Trench 6.**

This backhoe trench was cut through the Auburn Dam bank into the dam floor. Four major features were uncovered. Feature 1 was a semi-circular trough cut into the red clay subsoil and filled with yellow clay. Feature 2 was a semi-circular feature smaller than Feature 1 but also cut into the subsoil. It was filled with red clay fill. Feature 3 was the red clay fill of the dam bank construction. Feature 4 was the dark sand and clay of the dam fluvial deposits.
**Interpretation.** Features 1 and 2 were two phases of System A raceway. Feature 1 was the earlier raceway. It was filled with yellow clay and abandoned prior to the building of the dam bank. Feature 2 on the other hand was open at the time of the dam construction and was filled with the red clay fill of the dam bank. Feature 3 was the red clay fill of the dam bank construction. Feature 4 was the dark sand and clay of the dam fluvial deposits. The dam waters were at first swift, carrying grains of sand, and later became stagnant as seen in the mud deposit that comprised the bulk of the dam sediments.

**Trench 7**

This backhoe trench was placed in the west side of the Auburn Dam stone wall. Feature 1 was a semi-circular trough cut into the red clay subsoil. A small stone wall had been built directly to the West of Feature 1. Stratum 1 was a foot-thick, dark organic soil which overlaid Feature 1 and disappeared under the stone wall of the dam. Feature 2 consisted of large stones of an unknown feature underneath the construction fill and debris of the dam. Red fill topped by humus completed the strata in this cut.

**Interpretation.** Feature 1 is a continuation of the raceway trough of System A. It was supported by a small retaining wall of loose stones. The trough was filled upon completion of its function as a raceway, with yellow clay. The area was abandoned and not used for a time period as indicated by Stratum 1, dark organic zone. The dam construction took place on top of Stratum 1 indicating the passage of some time before that event took place following the abandonment of the System A raceway represented by Feature 1 of Trench 7 and Feature 1 of Trench 6 which closely resembled it. A large stone feature of unknown use was associated with the raceway. A period of construction of the dam followed by a period of stabilization is charted in Strata 2 and 3. Another period of construction took place, probably on the dam as seen in Stratum 6 which is topped by the present humus zone (Fig. 15).

**Observations.** Trenches of the Team A excavations of Check 3 to the south of Trench 7 revealed the arc of a trough filled with yellow soil and overlaid with a dark, organic soil. The direction of the trough and overlay is toward the iron-working site of Check 3 investigated by Team A.

**Interpretations.** It is believed that the raceway of hydraulic System B powered the iron-working machinery of Check 3 site investigated by Team A. This occurred at a time period prior to the construction of the Auburn Dam.
Conclusions

Two systems of hydraulic power are evidenced in the two raceways found in this site. System A, the earlier one powered the southern complex below the Auburn Dam at a time when the dam had not been constructed. System B was built specifically to power the Auburn Dam at a later period. Additional information should be sought on System A as it pertains to the further exploration and mitigation of Check 3, iron-working site.
PRELIMINARY REPORT
CHECK 19. LIMESTONE QUARRY AND KILN (18FR332)

Research Design

It was originally planned to excavate the kiln which had been reported on SHA maps prior to the construction of the existing Route 15. However, the owner, Mr. Leatherman, pointed out that while the kiln was indeed in the position indicated (Fig. 15) it was buried under the shoulder of the existing road. It was decided not to excavate the kiln because of the problem of it being buried under the highway and the fact that an excavation would not be tolerated so close to the road strip.

The 1979 Excavation (Fig. 16)

A backhoe excavation was cut into the site for approximately 30 feet up against the face of the limestone quarry. The cut revealed the stone floor of the quarry 3 feet below the surface. The soil above the floor was a dark organic muck resulting from the pond which the owner indicated had occupied the center of the quarry excavation. Fragments of limestone resulting from the quarrying process littered the base of the excavation. However, no cultural materials were found. The owner indicated that another kiln was to be found across the road from the site on private property. The site predated the life span of Mr. Leatherman who is in his sixties.

Interpretation

The lack of evenly excavated blocks of limestone suggests that this quarry was not used for building stone, but rather was used to produce lime for fertilizer and for whitewash paint.

Conclusions

Additional oral history data is needed from this site, which is one of several in the vicinity providing limestone for the surrounding area. There is no evidence to date connecting the site with the Catoctin Furnace specifically.
PART 4
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Foldout Map

Archaeological Salvage and Mitigation Project Proposal Alternate No. 1, U.S. Route 15, through the Catoctin Furnace Area.
Based on Maryland State Highway Administration Map Fig. 26, Following P. 124 in Final EIS (1977)
Fig. 1. Foldout Map of the Catoctin Furnace Site Area.
Fig. 2 Check 4, Spring-Bathhouse. A. Ground Plan. B. Profile a - b.
Fig. 3. Map of Check 9, Limestone Quarry, and adjacent sites (excavated by MAAR).
Fig. 5. Check 12, Feature 5, Raceway. A. Profile, B. Ground Plan. Legend for A and B.
Fig. 6. Check 12, Feature 1 and Feature 2, Iron Ore Mines.
"Charcoal Rds. converge (c. 50 ft. west)"

Check 12, Feature 4

Mine

Exposed "Charcoal Road"

"Dirt & Stone Public Rd." — c.1960

"Bell ringing tree"—Sycamore c.1960

Fig. 7. Check 12, Feature 6, Charcoal Road.
Fig. 9. Profiles of Check 12, Feature 6, Charcoal Road. A-B, Trench 1; C-D, Tests; E-F, Trench 2.
Fig. 10. Check 12, Feature 4, Iron Ore Mine, and Check 7 (MAAR)
Fig. 11. Check 15, Ore Railroad.
Fig. 12. Check 17, Raceways, and Check 4, Spring-Bathhouse.
Fig. 13. Map of Continuation of Check 17, Raceways with Auburn Dam.
Fig. 14. Check 17, Trench 3, End of Raceway in Auburn Dam (Feature 2) over earlier Raceway (Feature 1)

**LEGEND**

1. Dark humus
2. Light brown sandy loam
3A. Red sandy with slag furnace tailings
3B. Brown soil shot with charcoal flakes
4. Light brown subsoil with:
   - Some charcoal & slag at top of subsoil
   - Some iron flakes & yellow brown nuggets
5. Light grey & yellow clay
6. Dark grey clay with ripple marks at base
7. Light grey clay band (striated); with thin sand over it (both 2" thick)
8. Red clay fill
10. Grey clay strata

*Check LA 3B - not continuous*
LEGEND
1. Dark organic soil
2. Shattered rock
3. Red clay fill
4. Yellow clay fill
5. Red clay subsoil
6. Red Brown fill
7. Humus
7A. "Old" humus

Scale
hor. - 2/10" = 1 ft.
vert. - 4/10" = 1 ft.

Fig. 15. Check 17, Trench 7. Feature 1, Raceway; Feature 2, unknown feature.
Fig. 16. Ground Plan of Check 19.
APPENDIX A

A

PROGRESS REPORT

CATOCTIN FURNACE ARCHAEOLOGICAL MITIGATION PROJECT

U.S. ROUTE 15 FROM PUTNAM ROAD TO ROUTE 77
FREDERICK COUNTY
MARYLAND

SUBMITTED TO

Dr. Kenneth Orr, Project Director
Orr & Son, Consulting Archaeologists

John L. Fauth
Consulting Geologist

January 29, 1980
INTRODUCTION

The equivalent of 12 days of field work was completed during the period August 14-31, 1979 in various sectors of the project area. Field investigations principally focussed on Checks 4 and 12, Raceway Complex-Bathhouse and Ore Mines. However, observations were made, and data and samples collected at Checks 6 (Slave Cemetery), 9 (Limestone Quarry), and 11 (Race Pond) for laboratory study. Another major component of the field research was the development of a boring program to provide detailed subsurface data at Checks (Auburn Dam) 11 (Race Pond), and 12 (Ore Mines). Based on surface reconnaissance, and the examination of geologic and archaeologic data revealed in a series of trenches and test pits, a program consisting of 31 borings was proposed and undertaken by the Maryland State Highway Administration (SHA). Samples obtained from the borings were transported to Cortland on January 23, 1980.

SUMMARY OF PROGRESS

CHECK 4 - Bathhouse, Spring, and Raceway Complex.

A backhoe trench modified by hand excavation produced a transverse section across the raceway at a site east of 545+50 that exposed several stratigraphic elements, many containing cultural material. The form and location of the several elements are shown in Figure 1 as reconstructed from field measurements and notes. Samples obtained from several layers will be analyzed to ascertain the nature and possible source of the materials used to form the raceway and to subsequently fill it.

CHECK 6 - Slave Cemetery.

Rough field stones whose configuration and placement suggested that they are headstones marking grave sites were examined and classified according to rock type during the field study period at the request of the investigator in charge of this site. Most of the 100+ field stones examined were quartz-rich rocks termed quartzites. This material is derived from the rock which underlies the adjacent steep slopes and ridge crests immediately west of the site, and is commonly incorporated into the colluvial debris which mantles the lower slopes of Catoctin Mountain.

Samples of the uppermost 20 inches of the soil at the gravesite were collected for additional study. The red-brown color, texture, and lack of stoniness of the soil contrasts with the surficial material that generally mantles the project area. More detailed examination of these samples may provide some insight as to its origin and distribution, and thus the selection of this locality for a cemetery. No progress on this aspect of the study has been accomplished to date.
CHECK 9 - Limestone Quarry.

Bedrock exposed in a limestone prospect was examined, described, and sampled. Tentatively the rock is classified as a magnesium limestone containing various insoluble impurities. Microscopic and chemical analysis of rock specimens taken from the base, middle, and upper parts of the outcrop will establish the potential this limestone has as a flux. At present samples of the rock are being prepared for these laboratory procedures.

CHECK 11 - Race Pond.

Field work at this site included a cursory examination of the configuration of existing pond and its associated drainageways. In addition, strata and cultural material uncovered in a series of test pits and a few trenches were examined in an attempt to ascertain how the race pond area was utilized during the lengthy history of the iron works at Catoctin Furnace. Results of the field investigation were inconclusive.

A transverse profile of the raceway immediately east of existing U.S. 15 exposed a fine-grained sand with sub-horizontal laminations atop the raceway wall on the south side, and to a limited extent on the north side. The texture of the sand, its structure, and its position along the top of the race embankment is puzzling. Samples of the sand will be examined to determine the source and what specific purpose this material serves atop the embankment. This phase of the study had not been implemented as yet.

CHECK 12 - Iron Ore Mines.

FEATURE 1: From the extremities of a short, axial, east-west trench located at the entrance to the ore mine, an extension trench was cut to the north and another to the south into the adjoining hillocks. The cut extending northward from the east end of the axial trench exposed portions of an ore zone and the subjacent structured saprolite (Figure 2). The saprolite interval abruptly terminates along a planar surface that declines southward at an angle of about 50 degrees. In the second extension trench, a similar saprolite zone ends with a north-sloping surface of 45-50 degrees.

Deepening the northern extension trench and adjoining portions of the axial trench to approximately 9.7 feet below land surface exposed the horizontal continuation of the saprolite interval; apparently the ultimate base of the mine workings at this locality. The discovery and exhumation of timbers located and positioned to act as cribbing along the south wall of the axial trench reinforces the interpretation that the lowest level of mining had been reached at the site.
Samples of most strata exposed in the north extension trench, including the ore zone, are available for laboratory study. Examination and analysis are expected to provide useful data on the origin and formation of the iron ore deposit and some insight into excavation methods employed in mining.

FEATURE 2: Two trenches cut into opposing banks at the southwestern end of this feature, a shallow iron mine, were examined and sampled. Transverse profiles of the excavations have been constructed from field data. Of particular significance is the occurrence of a well-developed ore zone in Trench 1 which incises the southeast flank of the ore pit. Detailed laboratory examination of samples from the trench may reveal valuable information on the nature and origin of the ore deposits.

BORINGS

An extensive boring program completed by SHA in December 1979 provides much subsurface data for the areas of Checks 3, 11, and 12. Detailed examination and study of the core samples and the accompanying drillers' logs will aid in interpreting the stratigraphy of each feature, and hence its origin and use.

Longitudinal and transverse topographic profiles have been prepared for Check 12, Feature 1 and 2 (Figure 4). Subsurface data will be plotted on these profiles to define the configuration and extent of mining in these areas as well as the stratigraphy of the mined sites and the adjacent terrane.

Data from cores taken at the Race Pond (Check 11) and Auburn Dam (Check 3) should reveal the stratigraphy of those features and aid in assessing their origin, nature, and use.
No vertical exaggeration

CHECK 10
RACEWAY
Profile North Wall
Trench 3

Scale 1:40
Based on field sketch and descriptions

Backhoe overlayment

1. Raceway wall
2. "Topsoil"
3. Clay - gray and yellow; mottled
4. Sandy clay loam - brown
5. Sandy loam - orange and brown; variegated; charcoal
6. Clay - olive gray
7. Sand - olive gray
8a. Silty sand - red to brown; porcelain
8b. Silty clay - yellowish brown; rock fragments
9. Sand - brown and red; charcoal, glassy slag
10. Sand and silt loam - brown; charcoal, glassy slag
11. Clay - yellow; compact
12. Silt loam - yellowish brown; pebbly
13. Silty clay - gray; charcoal
14. Silty clay - brown
15. Sandy clay loam - brown to yellow orange
16. Silt clay - brown; rounded cobbles

(Feet)
**Check 12 Feature 1A**

**Ore Mine**

Profile East Wall
Trench 3

Scale 1:40
Based on field sketch and descriptions

---

No vertical exaggeration

**Topsoil**

Dark yellow orange to moderate brown clay; pale olive to medium gray laminations

Yellowish gray, dark yellow brown, and light olive gray silty clay (Fill)

Mottled gray, blackish red, and olive brown clay; nodules and granules iron ore

Saprolite

Dark gray, light olive gray, and moderate yellow orange, thinly banded clay

Approximate Interim Excavation Profile

Artificial cut slope

Ultimate Excavation Profile

Trench fill

Poorly banded olive gray clay; fill

Poorly sorted sand; fill

Approximate location of timbers; possible cribbing
CHECK 12 FEATURE 2
ORE MINE

Profile North Wall
Trench 1

Scale 1:40
Based on field sketch
and descriptions

Overburden; black,
organic-rich with
abundant charcoal

Yellow brown sandy
loam

Olive gray silty
clay

Mottled gray
clay

Iron

Brown clay

Nodular iron
ore
2 1/2'-3' thick

Approximate Excava-
tion Profile

No vertical exaggeration.
CHECK 12 FEATURE 2
ORE MINE

Profile North Wall
Trench 2

Scale 1:40
Based on field sketch and descriptions

"Topsoil"
Mottled gray clay
Yellowish brown sandy loam
Red-brown clay
Saprolite

Approximate Excavation Profile

No vertical exaggeration.
APPENDIX B

SOME NEEDS AND OPPORTUNITIES

for archaeological and historical research at Catoctin Furnace

Edward F. Heite
SOPA

Abstract:
It would seem that Catoctin has been studied to the point of diminishing returns. On the contrary, it appears that recent research has created a need for additional study. This paper explores the state of our knowledge at the end of the 1979 season.

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Two recent archaeological papers purport to shed light on the historical background of Catoctin. They are the 1971 Glenn Little report and the 1975 John Milner report, commonly cited by the names of the principal investigators. Both authors acknowledged shortcomings imposed by time and money, but both papers are useful. In order to understand what we do not know about the history of Catoctin, it is necessary to examine the shortcomings of the two papers. Nonetheless, it should be remembered that both papers have many positive features.

The 1971 paper reflects considerable sensitivity to local sources, and could serve as a bibliographical guide. The authors accumulated documentation that would have been most valuable if it had been completely analysed. However, the authors were unable to take the time for synthesis, and failed to exploit some sources. The paper's worst feature is an ignorance of ironmaking technology. Of the two, it is the more useful paper.
Milner's 1975 paper is more finished and lavishly illustrated, but it contains only 18 pages of pertinent text in an inch-thick presentation. Milner's illustrations apparently were chosen for their aesthetics rather than their usefulness. For example, both papers refer to certain historical maps of the site, but neither author saw fit to include them.

More valuable are Milner's note cards, which are available in microform from the Maryland Hall of Records. These cards were used to prepare the present paper.

On the whole, Milner's interpretation reflects better understanding of the technology, but his paper lacks substance.

The next investigator on the scene was Kenneth Orr, who attempted in 1977 to follow some of the leads on the ground. His preliminary work led in due course to the 1979 intensive testing. To this point, all research has been piecemeal and fragmentary.

In the meantime, Mrs. Marie Burns conducted an excellent survey of the land titles associated with the site. The impact of her research will be felt at a later phase.

This report is written as part of another fragmentary paper, reflecting the 1979 information-gathering exercises. Significant new knowledge has been collected. There is a consulting committee. Major sites have been extensively tested or salvaged. Laboratory work has begun. We have an excellent topographical base map. Oral history has been collected.
All of this is useful, but the parts do not constitute a whole. Documentary source material has not been married to the archaeological evidence. We still are faced with a growing file of preliminary reports. While each successive investigator may build upon his predecessors' works, none of us has been in a position to sit down with all the evidence at once, and to maturely re-evaluate all of it. On the following pages are still more unrelated thoughts and observations regarding the Catoctin research problem. Like the earlier reports, these pages are merely fragments of a puzzle that someone must inevitably piece together.

Catoctin's history is a good illustration of the major innovations in blast furnace technology. Warm blast, hard coal, steam, and other innovations came to Catoctin in due course. In 1835 Brien wrote to McPherson, mentioning "hearth stoves" in apparent reference to the new warm blast process. By the time of the Civil War, Catoctin was using steam power while other furnaces remained with water power. The technological history of the site needs to be interpreted more fully.

The following subheadings address particular research problems suggested by the 1979 work. If they seem disjointed, it is because the project is not yet, in this author's mind, ready for synthesis.
Archaeology and the commercial environment at Catoctin

Cast iron and wrought iron are very different metals. Made in different environments, they have different physical characteristics, and are sold in different markets.

Catoctin's surviving cast products are readily identified, since cast goods often bear labels. Even pig iron was labelled, and sometimes was dated. Producers of wrought iron stock seldom signed their work. A few wrought iron finished goods bear signatures, but they are usually of blacksmiths and not of ironmakers.

Thus the illustrations of signed pieces in the 1975 report convey the impression that cast iron was virtually the only Catoctin product. The illustrated objects could have been made on the casting floor of a furnace, but they could as well have been cast at a foundry.

In an operation as large as Catoctin, it is indeed probable that flask-cast hollow ware was made at a foundry rather than the blast furnace.

Surviving records, such as they are, should be surveyed to gain a more precise idea of the relationship between bar, pig, and castings in the Catoctin output.
The "Original" Catoctin Furnace Stack

The first furnace site should be sought on the 150-acre Goodwill tract, if we are to believe the 1803 deed so frequently cited. Mrs. Burns has fixed the boundaries of Goodwill, and thus has narrowed the area to be searched.

Alexander stated that the second site was three-quarters of a mile upstream from the first site. Since his informant was a Johnson, he probably is correct.

Locating the first furnace would considerably simplify the interpretation of other evidence.

Little assumed that the first stack was standing in 1880, since three furnaces were assessed in that year. However, the 1874 and 1884 American Iron and Steel Institute directories list only two furnaces, which they state were erected in 1775 and 1856. If the 1840 Alexander report is to be accepted, the 1775 date must be discounted.

The third furnace on the 1880 assessment must be explained. It is entirely possible that it was a cupola, or foundry. An imprecise assessor could have confused a foundry and a blast furnace. To the untrained eye, they might appear to be identical.

If we are to understand the history of Catoctin, we must identify all the ironmaking sites and place them in their proper contexts. Only a complete study, on and off the public properties, will clear up the ambiguities.
Primary and secondary furnace products

J. H. Alexander, in his 1840 report on Maryland iron, reported that Roger Johnson ran a forge with a finery and chafery, refining "stamp-stuff" from the cinder heaps of old Catoctin.

This operation was Bloomsbury Forge, on Big Bennett's Creek about five miles above the Monocacy. James Johnson was Alexander's authority; he stated that Bloomsbury operated only a year or two, but produced four or five tons of iron a week. Roger Johnson was at Bloomsbury Forge in 1794, when he placed an advertisement in the local newspaper, attempting to sell some of his works.

Recovery of iron from furnace waste was not a new idea; Lenik cites Hasenclever's earlier reference to the procedure.

Catoctin interests operated a rolling and slitting mill at Reel's Mill and a forge at Bush Creek before the end of the eighteenth century. In today's jargon, Catoctin would be called a vertically integrated business.

Vertical integration was typical of the larger American iron companies. Alexander Spotswood, the first Virginia ironmaker of the eighteenth century, operated an "air furnace" or foundry at Massaponax to recast pigs from his Tubal works.

The huge (by comparison) Principio Company before the revolution operated in three colonies, shipping ore and pig iron between its far-flung operations.
New ideas and techniques travelled quickly through the colonies, since ironmakers were notorious itinerants. The same names are encountered throughout the ironmaking region, associated with furnaces as investors or as furnace superintendents. These men were concerned with the entire spectrum of iron trade, particularly in terms of techniques for making more money.

Robert Durham, who ranged from Virginia to Pennsylvania during his short career as a furnace master, is best remembered for designing the Durham boat for hauling heavy cargoes on inland rivers. In considering a furnace industry, we must remember that it was run by innovative and aggressive managers.

While a furnace could produce stove plates and firebacks, it primarily produced pig iron and byproducts, neither of which could be used by consumers. A second, more profitable, refining process converted the furnace output into consumer goods.

Pig iron could be made useful in one of two ways: It could be re-melted and cast into consumer goods, or it could be hammered or rolled into wrought iron. Furnace byproducts, especially the frothy iron-rich "cinders", could be refined into useful metal on a small melting hearth or hammered in a forge. Glassy slag was in demand as road metalling, and tradition states that there were attempts to convert it into glass.

Power was another ironmaking byproduct. Iron furnaces were in blast for only a few months at a stretch. The rest of the year, the massive water power sources were available to other users. In lower Delaware, small iron bloomeries often shared dams with sawmills and gristmills. At
Catoctin, an elaborate lower raceway re-used the tailrace water, and could have operated even while the furnaces were in blast.

Secondary use of raceway water easily explains the long race below the furnace. It made sense to re-use a good head, and the Catoctin proprietors were eminently sensible men. The tailrace was diverted along a level until the surrounding ground was low enough to provide additional fall for other users. Thus the race hugs a ridge and ends at the head of a deep ravine.

Such a long race could not have pre-dated the second furnace that stands at its head. The furnace dam and headrace tamed the creek's potential at its most logical point. After falling through the furnace wheelpit, the water was available to lower users along the ridge. New users could incrementally expand and extend the race at comparatively little cost. The 1979 archaeological tests of the race produced evidence of such incremental enlargements.

A refiner of Catoctin pig iron would need two resources: power and iron. Since pig iron is heavy, the most economical place to use it would be near the furnace. Cheap power near the furnace therefore provided an ideal environment for secondary industries.

By 1860, however, steam was taking over. At least one furnace and the gristmill were using steam. Water power was fading as a profitable by-product. The conversion to steam is therefore a likely terminus ante quem for the raceways.
Forges and foundries

Forges and foundries are very different, although they often are confounded. They are physically similar; they sometimes use the same raw materials; and they may be in the same building. Thus it is dangerous to identify a building as a forge or as a foundry, except with the most explicit evidence. Uninitiated observers seldom are able to distinguish between the two. In the McPherson recollections, there is a reference for a "forge" that made castings.

Forges contained hammers, while foundries were centered around remelting hearths and casting floors. Both required power and fuel in quantity.

From an archaeological perspective, a foundry is characterized by:

- A power system for a bellows
- A remelting furnace, rather than an open hearth
- Several grades of casting sand
- Large open casting spaces
- Quantities of cast iron
- A pattern shop

A forge, on the other hand, is characterized by:

- A power system for a bellows
- A power system for a hammer
- An open hearth near the hammer
- A hammer mechanism and anvil
- Wrought iron scrap
- Hammer scale on floors

Without extensive excavation, it is unlikely that a secondary ironworking site can be definitively labelled foundry, forge, or both. Unless the anvil base is encountered, for example, the foundations for a trip hammer might easily resemble a bellows mechanism.
Rolling mills are another species of forge, where iron rolls are substituted for hammers. Ingots are heated and rolled between iron rollers to produce plates, bars, or sheets, of wrought iron. Rollers with ridges on their faces can slit the plates into bars. Rolling and slitting mills were sometimes associated with large iron enterprises during the later eighteenth century. Although none of the known Catoctin products were rolled, there is a tantalizing piece of evidence to indicate that rolling took place nearby.

The beginning point of the Mill Place tract of 1742 was marked in 1804 by an iron roller. This author was shown such a roller, still serving as a corner marker downstream from Catoctin; nearby is an abandoned mill seat. For some reason, this artifact has been popularly identified as part of the Rumsey steamboat, which had no such part. Another, similar, roller is in the possession of a nearby resident. The circumstances suggest a rolling and slitting mill site might be found.

The "Old Forge" excavations

With all these caveats in mind, we now turn to the fragmentary remains at the "Old Forge" site near the Auburn gate posts.

The site clearly consists of three phases. Near the "niche" in the dam is a large body of glassy furnace slag fill, apparently covering a deep pit. Tradition states that a ruin stood here late in the nineteenth century. Glassy slag is almost exclusively confined to this part of the site.
From its size, shape, and location, the "niche" seems to be a wheelpit for a very large industrial building. The Louise McPherson recollections refer to a charcoal warehouse and a "forge" near the Auburn gates.

On the surface, toward the intersection west of the "niche" is a second important element of the site. This element consists of several superimposed roadways and associated features. The posts; the various fills of the lane; right-of-way ditches; and highway department fill layers all are parts of this element. The roadbuilding activities effectively sealed, disguised, and provided a terminus ante quem for the most interesting element of the site.

This third element, possibly the earliest set of features, consists of a race fragment, several stone walls, some stone-lined post holes, and several ironworking areas enclosed by stone footings.

On the basis of cursory testing, the site can be identified as a water powered ironworking site, where several types of iron waste have been found. It is important to note here the absence of glassy slag in any quantity, only a few yards from the vast quantity in the "niche" fill.

West of the 1979 tests, Orr's original trenches uncovered wedge-shaped pieces of cast iron. These were waste from flask-casting processes, formed when molten iron ran out the vents in closed sand molds. Vents are important in a closed casting process, for they permit the iron to fully displace the air in the mold and flow out. In 1979, the backhoe hit a spoiled tripod pot casting in trench four. These finds raise the possibility that a foundry was present during the earlier period on the site.
Regardless of their stratigraphic location, such evidences point to the creation of castings or their re-use as scrap material.

Also on this site, there were several heavy pieces of spongy iron-bearing material that can be described as frothy. A metallurgist could tell if they were furnace waste, foundry dross, or very rich ore.

The excavated working floors contained another form of iron waste. The sands and clays were impregnated with red iron oxide.

Around a hammer forge, tiny sparks of hot iron are constantly being thrown into the atmosphere by the hammer's blows. They land everywhere, coating floors, walls, and people. Blacksmiths and welders are covered with little pockmarks from flying sparks. A modern cutting torch will spatter similar sparks for several yards.

Since such sparks oxidize as they fly, they build up in formless layers of oxide particles. Over the years, an appreciable coating can build up around a forge.

Charcoal, which is concentrated in several areas of the site, is also found in both forges and foundries. The nature of the material causes it to spread widely, especially in powder form. Since charcoal does not decompose rapidly in the ground, lumps of charcoal can be distinguished archaeologically from the ubiquitous charcoal powder. At this site, there were several concentrations of charcoal lumps, as if from stockpiles.

Since detailed analysis of the site is the responsibility of others, the present paper can only suggest explanations and possible alternative ways of interpreting the fieldwork. These notes are therefore offered as
a sort of blind control or independent view, independent of the site archaeologist’s more considered findings.

The excavated portion of the site, only a part of one side of the structure, appears to be part of a water-powered forge with a trip hammer.

The water power obviously came from the northeast and passed next to the pillars. It remains visible in the small test at N60W10. Parallel to the stone-lined watercourse is a row of stone-lined post holes. At least two hearth areas can be identified within ten feet of the race.

If this was a trip-hammer forge, the anvil base and footings for the hammer mechanism should be found southeast of the raceway. There is a trapezium-shaped unexcavated area southeast of the southern post that should be excavated.

The building extended at least fifty feet to the south, which was large enough to encompass several fires and a complex of raceways. Some of the lateral stone structures appear to have been drains or tailraces, running southeast.

Several building phases are suggested; the stonework differs in different areas, and the walls are not perfectly aligned.

The stone-lined channels could have been tailraces to wooden headrace flumes. At both Fredericksville and Tubal in Virginia, the headraces were wooden; the one at Fredericksville was 350 yards long. Such wooden flumes would have left scant remains in the ground. Since the roads obliterated everything above grade, the flumes should be sought near the bank where little subsequent grading has taken place.
Since the site obviously lies to the west of the 1979 excavations, the next campaign should be in that area. Data for the structure will be derived from the details of its floorplan. If only limited testing is feasible, it should be directed toward opening the maximum possible area, even to the point of compromising certain archaeological niceties. Toward this end, I recommend certain alterations in the excavation procedures.

First, the remaining portions of the structure should be excavated in a grid of squares with intervening balks, or parallel trenches with intervening balks.

Second, the site foreman should keep an up-to-date general plan at all times. Such a plan will enable him to change direction and follow clues.

Third, the excavation should be conducted more rapidly, with less attention to keeping large areas clean and open for inspection. We observed last year that much time was consumed by cleaning and re-cleaning excavation units.
Land title research and maps

Land records can be invaluable for the researcher, especially if land has changed hands often. Land was wealth in early America; land records are therefore the most complete surviving records.

A careful delineation of Goodwill on a large topographical map, for example, will narrow the search for the first furnace. A search of the Mill Place tract might recover the site of a rolling mill.

Baker Johnson's will mentions several physical features that could be identified by plotting the lines laid out pursuant to his instructions. In the McPherson recollections there is mention of a line drawn in 1848 to exclude the forge site, the pond, and the stream. This line, if it can be traced on the ground, could be a valuable piece of evidence.

Old maps can be scaled up and superimposed on newer base maps to reveal interesting correlations. The 1858 Bond map, often mentioned but seldom seen, is said to locate an old forge site near the present excavation. The Bond map must be obtained for this project.

Conclusions and recommendations

A unified and comprehensive archaeological and historical study of Catoctin is in order. One doubts that the constraints of salvage will permit the luxury of such a study, however.

On the other hand, why should we, as archaeologists, bother to dig sites if they will not be interpreted? This is the ethical dilemma forced by the
laws that mandated archaeological salvage in the first place.

Salvage without follow-through is not scholarship. It adds nothing to the sum of knowledge. It runs counter to the spirit of the law.

All this investment in preliminary reports has not given us a history of Catoctin.

We still need synthesis.

Camden, Delaware
February 1, 1980
Debut of Larry Angel for veteran center placed in final report.
PROPOSALS FOR THE EXTENSION OF

THE CATOCTIN FURNACE ARCHAEOLOGICAL MITIGATION PROJECT

Alex Townsend, Ph.D. Principal Investigator, Team A
John Milner Associates

Ronald Thomas, M.A. Principal Investigator, Team B
Mid-Atlantic Archaeological Research

Kenneth G. Orr, Ph.D. Principal Investigator, Team C
Project Director
Orr & Son, Consulting Archaeologists

February 8, 1980
Thurmont, Md.

Prepared for the State Highway Administration, Baltimore, Maryland
PROPOSALS FOR THE EXTENSION OF
THE CATOCTIN FURNACE ARCHAEOLOGICAL MITIGATION PROJECT

Introduction

Reference is made to Orr et al, Jan. 30, 1980, an interim report, which charts the progress and identifies the problems remaining in the mitigation process. The present paper is for the purpose of submitting proposals to accomplish the remaining work of mitigation.

Check 3, Iron-working Site (18FR320)

John Milner Associates

The proposal and cost breakdown is contained in Appendix 1 (Milner Nov. 9, 1979). Total contract value.............. $74,084.00

Check 6, Historic cemetery site (18FR323)
Mid-Atlantic Archaeological Research

The proposal and cost breakdown is contained in Appendix 2 (Thomas, Nov. 1979). Total contract value......................... $20,763.00

Land Records Project

It is proposed to conduct a search of the land records of the Catoctin Furnace area to facilitate the interpretation/investigation of all impacted sites in the dualization alignment. These records include survey maps, property lists, reports and the like, resulting from the wills, sales and transfers of property, tax records and other legal documents filed in the Frederick County Courthouse and in Annapolis. The products of the study will include maps showing the archaeological remains in relationship to the historical data from the legal documents. Artifact and feature descriptions from property lists and other descriptions will assist in interpreting the archaeological finds and thus enhance the mitigation effort. Such supportative historical information is especially important for sites such as Check 3 and Check 6 (foundry and burial ground respectively) for which oral history data appears weak - since these are features of the earlier period of iron-working at Catoctin.
It should be stressed that this record research is to be directed at only those features to be impacted by the proposed construction. All copies of documents, reports and so forth are to become the property of the SHA.

Three task areas are visualized: (1) data collecting, which will build upon a preliminary survey of land records conducted last year by Mrs. Marie Burns for the Catoctin Furnace Historical Society, (2) cartography, in which the historical maps data will be converted to the Maryland Division of Archaeology map of the Catoctin Furnace Site area (1:200), and (3) collation and analysis of the findings for the final report. The report is to be available for the use of the teams excavating at Checks 3 (foundry) and 6 (burial ground) in the spring of 1980.

Services.

K.G. Orr (Project Director), 77 hours @ 15.68/hr. $1200.00

Edward Heite (Project Supervisor), 64 hours @ 18.75/hr. 1200.00

Marie Burns (Principal Researcher), 280 hours @ 6.50/hr. 1820.00

Gregg Burns (Cartographer), 168 hours @ 6.50/hr. 1092.00

Research Assistant, 140 hrs. @ 5.00/hr. 700.00

Typist, 80 hrs. @ 5.00/hr. 400.00

Expenses.

Transportation 192.00
Photo Reproduction 125.00
Xerography 150.00
Drafting Supplies 250.00
Office Supplies 125.00

Total Land Records Project $7254.00
Oral History Project

It is proposed to conduct an oral history project to assist in the interpretation/investigation of archaeological features impacted by Route 15 dualization construction, and to amplify historical data in providing a socio-cultural background for the mitigation of these features. New questions are to be posed, new informant sources tapped, and some confirming of previously secured oral history will be sought.

The end product of the Oral History Project will be historical data of high probability to serve as background and guide data in answering specific questions contributing to the mitigation of the impacted sites. Such data includes specific information on the functions and chronological position of the impacted features, the complexes of features such as the early southern complex of iron working, the several systems of water power, and the technological systems of mining and iron-production for the various developmental periods at Catoctin Furnace.

Three tasks are visualized: (1) interviews with informants estimated to number more than 24, with tape recorders, (2) collation of data and report preparation, and (3) transcription (relevant data only) and the typing of the tape recordings. Essential information will be made available for the use of the excavating teams at Checks 3 and 6 in the spring of 1980. By these means the excavating teams will be alerted to oral history leads for their work and may pursue further studies with knowledgable witnesses as informants. Photographs will be made of the informants, any memorabilia including photographs of the subject under discussion and the like.

It must be stressed that oral history research is to be directed only at an understanding of those features to be impacted by the dualization construction. Equally important, however, are data leading to an understanding of the socio-cultural framework within which the impacted features functioned in the past.

Two main groups of informants will be interviewed: (1) local authorities including William Renner, Marie Burns, Mary Rae Cantwell, J. Eugene Anderson and Frank Mentzer, and (2) descendants of families connected with the mining and related activities at Catoctin Furnace. Such families include: McPherson, Akers, Sweeney, Wollard, Miller, Jacques, Fraley, Weddle, Kelly, Anders, Nunnamaker, Carty, Stitley, Makly Harbough, Brice, Fogel, Isonogle and Martin. Those families contacted to date have shown a keen interest and have cooperated well with the oral history study. It is estimated that 24 interviewees will each average 3 hours of tape recording of which 36 hours will prove relevant.
Services.

K.G. Orr (Project Director & Supervisor).
Supervising of interviews 100 hrs @ 15.68 1568.00
Collation of data and report preparation
100 hrs @ 15.68 1568.00

Ronald Orr (Interviewer)
Interviewing of informants, 280 hrs. @ 7.84/hr. 2196.00

Mary Ethel Michael (Assistant Interviewer,
Transcriber/Typist)
Interviews with informants, 60 hr. @ 6.50/hr. 390.00
Transcription (relevant data only) and typing,
200 hrs. @ 5.00/hr. 1000.00
6722.00

Expenses

Transportation 250.00
Office Supplies 150.00
Recorder rental (2) 500.00
Cassettes 150.00
1250.00

Total Oral History Proj. $7972.00

Project Management and Site Synthesis

The basic objective of project management is to ensure completion of the excavations and reports required in the mitigation process which still remain to be done. The project director is also responsible for pulling together all pertinent data on the Catoctin Furnace site to arrive at a comprehensive interpretation of the archaeological situation. This involves intra-site comparisons with close examination of all available data and artifacts from all excavations including the subcontractors excavations of 1979 (skeletal material at the Smithsonian Institution excepted). For this reason the field lab at 115 W. Main St. Thurmont, Md. will be required to receive study collections for review and comparisons from Jan. through October 1980. Conferences will be held at the lab with the principal investigators, advisory panel and interested persons.

* No materials remain from the 1935 WPA dig. Artifacts in the Md. Division of Archaeology include those excavated by and reported in Orr and Orr 1975, 1976, and 1977.
Services.

K.G. Orr (Project Director),
April-August: ca. 1-2 days per week to coordinate with
Milner Associates team and MAAR team during their
fieldwork and report preparation, and to
integrate and interpret all project data.
384 hours @ 18.75/hr.  $7200.00
September-October: prepare final report,
collating and summarizing entire SHA
endeavor.
320 hours @ 18.75/hr.  6000.00

Ronald Orr (Chief Assistant)
April-August: circa 1-2 days per week to
assist Project Director with administration/
coordination duties.
384 hours @ 7.84/hr.  3010.00
September-October: to assist Project Director
with final report synthesis and preparation.
160 hours @ 7.84/hr.  1254.00

Rita Orr (Field Assistant)
April-October: ca. 2-4 weeks to assist in the
field lab during Milner and MAAR fieldwork
and during final report preparation.
160 hours @ 5.23/hr.  840.00

Expenses

Transportation. 6250 mi. @ 16¢/mi.*  1000.00
Per diem (food). (Project Director)
111 days @ $12/day  1332.00
Field Lab.
Rent. 10 months (Jan.-Oct. 1980) @ 275/Mo.  2750.00
Oil..  500.00
Electricity  400.00
Water  100.00
Lab supplies  300.00
Photo Supplies  275.00
Communications  300.00
Typewriter rental  150.00

7107.00

* This estimate based on 22 weekend roundtrip to home in
Alexandria (2640), 88 days local travel (1408), and 2202 miles for
proposed trip to Courtland N.Y. to study cultural materials in borings,
and several trips to nearby furnaces for comparative data.
Outside Specialists.

J. Lawrence Angel.  Physical anthropologist, Smithsonian Institution.  Gratis

Edward Heite.  (Industrial Archaeologist & Archivist) Ca. 1/2 time for consultation on general iron furnace technology (remainder of time spent on Land Records Project - see above) 64 hrs. @ 18.75/hr.  1200.00
Transportation.  Camden Del.-Thurmont 321 mi round trip X 8.  2568 mi. @ .16¢/mi.  411.00
Per diem: Lodgings - 16 days @ $23/day  368.00
        Food - 16 days @ $12/day  192.00
                                    2171.00

Ronald Houghton.  (Photographer) artifacts and special features for Final Report.
64 hours @ $15/hr.  960.00
Transportation.  Centreville, Md. to Thurmont, 292 mi. X 4.  1168 miles @ 16¢/mi.  187.00
Per Diem - lodgings.  8 days @ $23/day  184.00
        Food.  8 days @ $12/day  96.00
Supplies.  20, 8 X 10 photos @ $5/ea.  100.00
        80, 4 X 5 photos @ $2.50/ea.  200.00
                                    1727.00

John L. Fauth.  (Geologist) Consultations in preparation of Final Report.  48 hours @ $15/hr.  720.00
Transportation.  570 miles round trip Courtland - Thurmont X 3.  1710 mi. @ 16¢/mi.  274.00
Per Diem - Lodgings: 6 days @ $23/day  138.00
        Food:  6 days @ $12/day  72.00
                                    1204.00

Total Project Management/Synthesis  $30513.00

Total Orr & Son contract value  $45739.00
Total John Milner Associates  74084.00
Total MAAR Contract  20762.62
Grand Total  $140,585.62

The total amount sought from SHA to complete the mitigation procedures at the dualization of Route #15 as an extension of contract F522-152-770 is $140,585.62
APPENDIX 1

A Proposal for
Additional Archeological Excavations
Site Number 18FR320
Catoctin Furnace
Frederick County, Maryland

submitted to...

Maryland Department of Transportation
State Highway Administration,
State of Maryland

by

John Milner Associates
309 North Matlack Street
West Chester, PA 19380

November 9, 1979
A Proposal for
Additional Archeological Excavations
Site Number 18FR320
Catoctin Furnace
Frederick County, Maryland

In accordance with the recommendations of Dr. Kenneth Orr, Project Director, and Mr. Tyler Bastian, State Archeologist, John Milner Associates is submitting this professional services proposal for additional archeological excavations at the site of early foundry operations at Catoctin Furnace (site 18FR320). The need for additional investigation is a reflection of problems and questions which have been defined through our initial excavations during the summer of 1979, together with the extent and complexity of features encountered at that time.

This proposal is divided into the following sections: a brief summary of the results of the 1979 investigations in the light of initial project goals, a statement of remaining problems and a suggested research design, and a fee breakdown for the proposed services.

INITIAL GOALS AND INTERIM RESULTS

It was initially proposed that a minimum of five percent of the site area would be sampled during the 1979 excavations. This estimate was based upon a site area thought to comprise approximately 6300 square feet. A total of approximately 2100 square feet was actually excavated (see the attached figure), representing about 33 percent of the estimated site area. It is now thought that the site boundary will encompass at least 10,000 square feet and possibly much more. Not only is the site more extensive than anticipated, but the features encountered are both numerous and complex. Interpretive and research questions which remain to be answered, and which are outlined below, together with the obvious significance of the site area for an overall interpretation of ironworking activities at Catoctin, suggest that additional subsurface investigation of site 18FR320 is needed.

The research design prepared prior to the 1979 investigations at site 18FR320 included the following objectives:

1. Determination of the exact location and configuration of any remains of industrial structures, if present.
2. Determination of the function of any structural features encountered.
3. Determination of the means of construction of the stone dam and the basin which it encloses.
4. Determination of the specifics of the use of waterpower and, insofar as possible, other technological aspects of iron production at the conjectural foundry and forge.
It was anticipated that the pursuit of these objectives could be adequately accomplished within the time frame originally proposed. The extent and complexity of the site indicated during the excavations, however, effectively frustrated attempts to satisfy other project goals.

Regarding the location and configuration of remains of industrial structures, excavation of the site has thus far revealed the presence of one rectangular room with stone foundation walls and a yellowish sandy floor. Adjacent to this room portions of a number of stone walls were uncovered, some of which may have been foundation walls. Others were too small to have served as foundations and probably served a retaining function. Such structural evidence extended over an area greater than that originally anticipated, with the result that most of the investigative effort was exploratory in nature. It was, therefore, impossible to intensively investigate any particular feature or to adequately examine the relationship between features. The lack of available time for intensive excavation also made it impossible to determine the function of the structural features which were unearthed.

Unless it is subsequently discovered that structural features extend beneath the wall of the dam, it is felt that adequate excavation of the dam itself has been accomplished. Backhoe excavations undertaken by Dr. Kenneth Orr have revealed clear profiles of the stone and earth retaining wall of the dam, profiles which also reveal the stratigraphic relationship of the dam with the adjacent iron working area.

Backhoe cuts through the dam also revealed evidence of a raceway which may have once supplied waterpower to structures in the iron working area. This discovery is of critical significance as it provides a starting point for an investigation of the mechanics of water power at the site. An understanding of the details of the use of such power is crucial to an interpretation of the nature and extent of iron working operations at site 18FR320.

It should be noted that the excavations conducted during 1979 have resulted in the recovery of ample evidence of iron casting, including evidence of the casting of hollow wares. Differences in size and shape of mold gates, or sprues, suggest variations in technology or in items produced.

REMAINING PROBLEMS AND RESEARCH DESIGN

Objectives for an additional phase of investigation at site 18FR320 remain substantially unchanged from those formulated prior to initial excavations. Realization of the extent and complexity of subsurface features, however, demands a substantial rethinking of research design.

It is apparent that the boundary of the site has not yet been adequately defined, a factor requiring additional exploratory investigation. It is thus proposed that a portion of the next phase of investigation comprise an exploration of the site perimeter. Such exploration can most economically be carried out with the use of a backhoe. Because the actual extent of the site and the
features it contains is yet unknown, it can not be proposed that features encountered in the course of exploratory investigation will be satisfactorily mitigated through careful excavation. The level of effort required for adequate mitigation can only be estimated after the extent of the site is fully understood.

Exploratory excavations are proposed for locations north, east, and south of the area excavated in 1979. Information recovered from backhoe excavations undertaken by Dr. Kenneth Orr suggests that the stonefaced earthen dam postdates the earliest ironworking activity at the site, thus raising the possibility that additional features may be buried north of the known site area. Accordingly, some amount of testing should be carried out within the perimeter of the dam in order to determine the presence of subsurface features and to determine the nature of the historic grade prior to construction of the dam embankments. Proposed peripheral test units are illustrated in Figure 2.

Test units excavated south and east of the known site area will be placed in locations intended to permit determinations of feature presence or absence as well as to allow exploration of the extent of features already encountered. It is proposed that at least two units be opened in the area south of the existing storm drain which lies approximately sixty feet south of the area already excavated. Excavation of the proposed test units should suffice to define the extent of site 18FR320.

Remaining project objectives can best be met through intensive excavation of the area within and immediately adjacent to the known site area. Details of water power as it was utilized at the site, relative chronology and function of the various features, and an interpretation of the nature and extent of ironworking at the site are dependent upon careful excavation of features and strata. Areas proposed for intensive investigation are shown in Figure 2.

It should be possible to achieve a better understanding of the mechanics of water power at the site by tracing the course of the raceway discovered by Dr. Orr. Careful investigation of the raceway should permit the recovery of evidence bearing upon the specifics of water wheel technology as applied to iron working at Catoctin. For example, it is anticipated that remains of a wheel pit will be found at some point along the course of the race. Irregardless of the type of wheel employed, a masonry and/or wood lined pit would have been necessary either for channeling water to the wheel or for achieving the necessary elevation. Discovery of a wheel pit should then allow an interpretation as to the orientation of a drive shaft and thus to the possible discovery of associated features. It is also anticipated that remains of a tailrace will be present and some attempt should be made to determine the relationship between this feature and the forge area east of the dam.

In addition to specifics of water power, intensive excavation should also be undertaken in an attempt to determine the relative chronology of structural features encountered at the site. It is important for an interpretation of technological change at Catoctin to determine whether the various walls and associated features were constructed contemporaneously or whether the features reflect a technological evolution of the site. Artifacts and iron waste, for example, recovered thus far are suggestive of some degree of variation in iron
casting. Careful excavation and comparison of the features may also permit more accurate interpretation of the specific ironworking activities which were once associated with each.

It seems of critical importance to an understanding of ironworking activities and technology at Catoctin to attempt a determination of the extent of the kinds of operations once conducted at site 18FR320. While the date of operation of the site is still in doubt, it was not common until the second half of the nineteenth century to find foundry operations apart from a blast furnace. That is, the common arrangement was simply to conduct casting of iron articles directly from a blast furnace. A concentrated documentary research effort may shed some light upon the extent of contemporaneous operations at Catoctin as well as reveal additional information regarding the types and quantities of materials produced.

It is proposed that the primary method for intensive investigation will be hand excavation of five foot squares, with all such units oriented to the site grid established during the 1979 field season. Where thick overburden still exists, an effort will be made to remove most of this material with the aid of a backhoe. Screening of excavated soils will be carried out only when such soils are thought to contain artifactual materials deposited in the course of ironworking activities.

All artifacts recovered will be cleaned and conserved as necessary. Analysis will concentrate upon the recovery of information bearing upon the nature of and changes in technology of iron production at site 18FR320 and will include an artifact catalog.

COMPENSATION AND COST BREAKDOWN

John Milner Associates proposed to provide the services outlined above for a sum of Seventy Four Thousand and Fifty Nine Dollars ($74,059.00). It is understood that the proposed investigations are to be undertaken as part of a cost reimbursable contract. Invoices will be submitted every two weeks and will include a brief progress report. Final payment will be due upon receipt and acceptance of the final report.

Cost Breakdown

Field Investigation

<table>
<thead>
<tr>
<th>Position</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
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<tbody>
<tr>
<td>Principal Investigator</td>
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<td>10.67</td>
<td>1,707.20</td>
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<td>Chief Assistant</td>
<td>320</td>
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$15,518.40 $15,518.40
Laboratory Analysis and Conservation

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<th>Payroll</th>
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<tbody>
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<td>$853.60</td>
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<tr>
<td>Chief Assistant</td>
<td>200</td>
<td>6.90</td>
<td>1,380.00</td>
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<tr>
<td>Laboratory Assistant</td>
<td>320</td>
<td>5.18</td>
<td>1,657.60</td>
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<td><strong>$3,891.20</strong></td>
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Report Preparation

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<td>Draftsman</td>
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Miscellaneous

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Overhead @ 105% = $28,314.72
Profit @ 10% = $5,528.11

Total Labor, Overhead, and Profit = **$60,809.23**

Reimbursable Costs

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<tr>
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<th>Cost</th>
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<td>Food Allowance</td>
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<td>Lodgings</td>
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<td>Travel</td>
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<td>Printing</td>
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Total: **$13,275.00**

Total Contract Value = **$74,084.00**
APPENDIX 2

Mid-Atlantic Archaeological Research Inc.

Proposal for

Completing Excavation of Check 6, Burial Ground
Dr. Kenneth Orr, Principal Investigator
Catoctin Furnace Archeological Project
115 West Main Street
Thurmont, Maryland

Dear Dr. Orr:

As per your request I am attaching a budget proposal for continued excavations at the Catoctin Furnace cemetery site (Check 6). The proposal is based upon the presence of less than 30 burials in the unexcavated portion of the cemetery and a removal rate by our team of one burial per 4 man days. The proposal suggests the use of a six person team working with the Field Supervisor.

The above rate is predicated on the successful removal of top soil down to just above coffin level with a Grade-all. The Grade-all is required since it does not necessitate the driving over of freshly stripped soil with the machine. The Grade-all will be used in conjunction with a three person team for a period of six days. After all burials have been located and identified by this small team the full field crew will be called in.

We believe we can guarantee you that the extraction rate will be met. We do not wish to attempt to remove the remaining graves with no concern for scientific data and believe this can be done in an efficient manner so that the needs of the archaeological profession and the highway operations can be met.

We will be pleased to initiate operations in the early spring. The proposal is self explanatory. Please note that I have changed the rate for overhead to our usual figure of 64%. I hope that this can be arranged under the terms of the current contract.

Sincerely yours,

Ronald A. Thomas
MAAR President
# Mid-Atlantic Archaeological Research, Inc.
**October 21, 1979**

**Budget Proposal**
- Catoctin Furnace § 6
- Data Recovery Project

## Task I: Mechanical Excavation

<table>
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<th>Item</th>
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<th>Rate</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>A. Wages - Principal Investigator</td>
<td>2 days</td>
<td>$85.00</td>
<td>$170.00</td>
</tr>
<tr>
<td>- Field Supervisor</td>
<td>6 days</td>
<td>$50.00</td>
<td>$300.00</td>
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<tr>
<td>- Field Crew (2)</td>
<td>.12 days</td>
<td>$38.00</td>
<td>$456.00</td>
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<td>B. Overhead (65% of wages)</td>
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<td>$601.90</td>
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<tr>
<td>C. Expenses - Per Diem ($12.00)</td>
<td>20 days</td>
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<td>- Lodging ($23.00)</td>
<td>13 nights</td>
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<tr>
<td>- Mileage ($.14)</td>
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<tr>
<td>D. Machine Rental (Grade-all)</td>
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<td>$2000.00</td>
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**Sub-total** $4150.90

## Task II: Burial Excavation (30 burials maximum)

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<td>A. Wages - Principal Investigator</td>
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<td>$1000.00</td>
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<td>- Field Crew (6)</td>
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<td>B. Overhead (65% of wages)</td>
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<td>$3835.00</td>
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<td>C. Expenses - Per Diem ($12.00)</td>
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<td>- Lodging ($23.00)</td>
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<td>- Mileage ($.14)</td>
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## Task III: Report Preparation

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<th>Item</th>
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<tbody>
<tr>
<td>A. Wages - Principal Investigator</td>
<td>2 days</td>
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<tr>
<td>- Field Supervisor</td>
<td>5 days</td>
<td>$50.00</td>
<td>$250.00</td>
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<tr>
<td>- Lab Aide</td>
<td>5 days</td>
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<td>$150.00</td>
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<tr>
<td>B. Expenses - Per Diem ($12.00)</td>
<td>12 days</td>
<td>$10.00</td>
<td>$144.00</td>
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<tr>
<td>- Mileage ($.14)</td>
<td>500 miles</td>
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<td>$70.00</td>
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<td>C. Overhead (65% of wages)</td>
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Budget Sub-Totals

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<th>Task</th>
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<td>I</td>
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<tr>
<td>II</td>
<td>$13,535.00</td>
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<td>III</td>
<td>$1,189.12</td>
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$18,875.02

Profit Amount

10% of Sub-total | $1,885.50

Project Budget Total | $20,762.52

This budget proposal is valid for a period of 60 days from signed date.

Ronald A. Thomas, MAAR President

Date: 10-21-79