2.0 RESEARCH DESIGN AND PHASE III DATA RECOVERY METHODOLOGY

DelDOT requested that Skelly and Loy, Inc., prepare a research design and Phase III data recovery plan (Espenshade 2003) as a means to mitigate the effects of the Blue Ball Area Transportation Improvements project to archaeological site 7NC-B-54 (Ronald McDonald House). Based on the characterization of the archaeological site as a historically unplowed (or infrequently plowed), low density lithic scatter most intensively utilized during the Woodland I period, the research design emphasized methods which would elucidate information about non-base camp intra-site structure and intra-site variability in visit functions; individual behaviors; and Piedmont settlement patterning. The research design and data recovery plan document was reviewed and approved by DelDOT and DESHPO prior to implementation.

Subsequent to the approval of the research design and data recovery plan, a reduction in the analytical scope of work was requested by DelDOT in order to right-size the project. A second technical proposal (Gundy 2006), which reduced some of the proposed analytical studies, was submitted to and approved by DelDOT. The justification for retaining or eliminating any tasks was based on the amount of time and costs already invested versus the time and costs needed to complete the tasks, the productivity of the tasks (some tasks suggested in the original data recovery plan did not appear viable once the fieldwork and analysis were complete), DelDOT's compliance responsibilities, and the utility of the task for enhancing or streamlining future publicly funded (DelDOT) archaeological research.

2.1 Research Issues

The site was recommended eligible for listing in the NRHP for its potential to address both generic research issues from the state context documents dealing with the Woodland I period of the Piedmont zone (after Custer 1986, 1994; Custer and DeSantis 1986), and specific research issues dealing with intra-site structure, functional variability, and individual behaviors. The generic research issues reference those briefly described in *A Management Plan for Delaware's Prehistoric Cultural Resources* (Custer 1986) for the Piedmont Uplands, Woodland I Study Unit where archaeological site 7NC-B-54 (Ronald McDonald House) is located. Custer (1986:174) states that "the relatively large number of known sites highlights the wide variety of research questions that can be addressed for the Woodland I archaeological record." Unfortunately, Custer (1986) only specifically identifies "the processes of social transformation" as a research issue for this period. The reader must infer - based on Custer's (1986:170-171)

explicit focus on cultural materialism and ecological anthropology - that issues of culture history (to provide chronological control), site function, adaptation, and settlement must be paramount among his unspecified research issues for Woodland I. In review of the draft NRHP Registration Form for the archaeological site, the DESHPO also suggested Piedmont settlement as a key research issue.

Beyond addressing basic, generic research issues (culture history, settlement, adaptation), the Phase III data recovery investigations introduced new approaches/perspectives to examining site specific research issues. It is recognized that the research value of the site resides in its moderate to good integrity and its excellent clarity. Clarity, in this case, refers to the potential to capture distinct, spatially discrete activity areas. Because the site lacks evidence of repeated, overlapping occupations, because there are indications that diagnostic projectile point forms may be activity area-specific, and because the signatures of each cluster suggest relatively limited activity, the site offers the data necessary to address intra-site structure and intra-site variability in visit functions, both of which are subsets of the generic settlement/site function issues. Functional explanations of individual site visits may help provide a better understanding of settlement, especially in the type of environmental setting where archaeological site 7NC-B-54 (Ronald McDonald House) is found (i.e., ridge nose overlooking a small interior wetland [Custer 1986:Figure 20]). Issues of individual behavior may also be addressed *via* the use of information resultant from individual choice in site use.

2.2 Addressing the Research Issues

It was thought that the data resultant from the excavation and study of four distinct activity areas at archaeological site 7NC-B-54 (Ronald McDonald House) would be sufficient to address many of the broad research issues for Woodland I sites located in the Piedmont. Based on the results of the fieldwork and analytic research, it appears that this idea has been borne out. In addition, the data will allow us to address some of the previously identified site-specific research issues, such as site-specific landscape use parameters (linked to issues of settlement, chronology, site use, and adaptation). Any discussion of site-specific (actually visit-specific) landscape use must start with an understanding of the function(s) of each site visit. Rather than begin with the assumption that all site visits were functionally similar, this research issue demands definition and interpretation of each artifact cluster as a separate entity. Once functions have been suggested for each artifact cluster, landscape use parameters can be addressed at the intra-site, inter-site, and site *vs.* non-site levels. The completed analyses

indicate that functional differences are present between the four activity areas, despite their proximity on the landscape. The four artifact clusters sampled have verified our initial suspicion that not all site visits had the same purpose or duration.

What are the diverse reasons that single individuals may have chosen to stop at the general location that is archaeological site 7NC-B-54 (Ronald McDonald House) on three to four occasions? This research question was premised on the twin beliefs that: 1) there would be diverse activities represented by the three to four artifact clusters present at the archaeological site, and; 2) that each of these site use episodes was short-term. Phase III data recovery research suggests that these two conditions have been met, and that behavior in non-normative settings can be addressed from the recovered data. Four distinct activity areas are sufficient to underline the diversity of possible site uses, and to question any one-to-one link between site location and site use.

The clarity and integrity of this archaeological site make it well suited to addressing assemblage-based functional signatures. Unlike plowed or disturbed sites that offer only averaged signatures of many visits, archaeological site 7NC-B-54 (Ronald McDonald House) allows us to recognize the functional signature for each site use episode. Such signatures can then be compared with signatures from other archaeological components in the vicinity.

What do the artifact clusters at this site represent in terms of time and energy? These issues will be looked at from the perspective of this site, ethnographic information, and potential site-related experiments in order to test the hypothesis that the visits to archaeological site 7NC-B-54 (Ronald McDonald House) were the result of extremely short-term, extremely low-energy activities. The initial data recovery results suggested that this hypothesis would be validated. The four excavated artifact clusters, in conjunction with the Phase II data, are sufficient to address this issue.

The wetlands near the site would have been attractive to pre-contact period peoples for numerous and varied natural resources, including aquatic plants, possibly migratory waterfowl, muskrat, raccoon, opossum, and possibly beaver and mink. In contrast to the traditional emphasis on hunting at these small lithic scatters, trapping is proffered as a viable activity, which may be responsible for the archaeological remains or lack of archaeological remains found at small lithic scatters like Site 7NC-B-54 (Ronald McDonald House) and countless others. The archaeological literature of the eastern United States overplays the highly romanticized roles of men as large game hunters and women as gatherers/horticulturalists. The importance of trapping is rarely addressed in archaeological reports, and trapping represents one of many light-signature activities, which are combined or glossed over, and typically are

being categorized as procurement sites. Trapping is one of many activities that may have created small, short-term site visits. A goal of the overall study is to address the wide range of behaviors that can create "lithic scatters." It is important in defining possible activities to include a class of actions (trapping) that was of major economic importance to Native Americans, and that most likely led to the creation of many small, low intensity sites.

The Phase III data recovery excavations completed to date provide a sufficient platform from which to address both general contextual and site-specific research issues. Four activity areas have been completely excavated. Although portions of additional activity areas remain unexcavated, the data contained in those areas are not crucial to the outlined investigations. Based on the scope of the transportation project and the available time and funding, a sufficient and reasonable level of excavation effort that will allow us to address the research issues most appropriately defined for the site has been undertaken. For the present project, that level of effort was defined as sufficient excavation to fully capture three to four distinct activity areas. The Phase III investigations at archaeological site 7NC-B-54 (Ronald McDonald House) have exceeded the proposed level of effort in the field excavations by more than 25 percent, have achieved the goal of completely excavating examples of three to four activity areas (four were excavated), and have provided a reasonable platform for addressing the defined research issues.

2.3 Phase III Data Recovery Fieldwork

The goal of the excavations at archaeological site 7NC-B-54 (Ronald McDonald House) was to isolate and fully capture at least three activity areas, which appeared as artifact clusters, present at the site. Rather than working with a normalized interpretation of the site, which would assume that all the visits by pre-contact period peoples to the site were for the same purpose, data from the identified and excavated activity would be compared to evaluate the functional differences of each visit.

It was recognized from the outset that sufficient excavation to delineate specific activity areas may also capture "noise" from adjacent activity areas. Furthermore, given the partially overlapping nature of some of the activity areas, it would not be reasonable to keep excavating until the total of every activity area encountered had been excavated. Hypothetically, such an approach would lead to continued excavation of overlapping activities until, taken to its extreme, the excavations would have resulted in nearly 100 percent excavation of the site. This was not

the intent of the data recovery plan, and the research issues can be addressed with the excavation data from three or more complete activity areas.

In order to completely excavate three or more activity areas at archaeological site 7NC-B-54 (Ronald McDonald House), two stages of excavation were completed (Photographs 1, 2, 3, 4, 5, 6, and 7). At the end of the first stage, additional excavations were recommended to fully excavate an activity area partially captured in the initial excavations. The second stage completed the excavation of the activity area. The original plan to excavate three blocks of 25.0 m^2 (269.1 ft^2) each was modified due to physical changes at the site that occurred between the Phase II testing and Phase III data recovery investigations. One of the proposed block locations (Block 2) was destroyed by the expansion of a parking lot (Photographs 8 and 9). In consultation with the DESHPO and DelDOT, the excavation units that were to be placed in Block 2 were reallocated to Blocks 1 and 3. The original data recovery plan called for the excavation of 75 1.0 x 1.0 m (3.3 x 3.3 ft) test units. In actuality during the first stage of excavation, 38 test units were excavated in Block 1 and 47 test units were excavated in Block 3, totaling 85 test units (Photographs 10 and 11).

At the completion of the first stage of excavation, one artifact cluster had not been fully excavated; therefore, eight additional 1.0 x 1.0 m (3.3 x 3.3 ft) test units were proposed for the second stage of excavations. These test units were positioned within the site to capture the remainder of the incompletely excavated artifact cluster. Upon review of the field findings, the second stage of excavation was expanded slightly and a total of nine 1.0 x 1.0 m (3.3 x 3.3 ft) test units was excavated. Ninety-four 1.0 x 1.0 m (3.3 x 3.3 ft) test units were excavated during both stages of the Phase III data recovery fieldwork (Figure 2).

In order to more fully document the depositional sequences at the site, and provide information regarding the spatial relationships of the activity areas, the geomorphological studies were performed during the Phase III data recovery fieldwork. Within the block excavations, exposed soil profiles were examined and described according to the methods and nomenclature prescribed by the United States Department of Agriculture-Natural Resources Conservation Service (Schoeneberger *et al.* 2002). These soil profile descriptions aided in the overall site interpretations.

Photograph 1. Excavations at Site 7NC-B-54 (Ronald McDonald House), facing south.

Photograph 2. Excavations at Site 7NC-B-54 (Ronald McDonald House), facing north.

Photograph 3. Excavations at Site 7NC-B-54 (Ronald McDonald House), facing southwest.

Photograph 4. Transit work at Site 7NC-B-54 (Ronald McDonald House), facing northwest.

Photograph 5. Bailing out the excavation units at Site 7NC-B-54 (Ronald McDonald House), facing north.

Photograph 6. Screening at Site 7NC-B-54 (Ronald McDonald House), facing southwest.

Photograph 7. Backfilling at Site 7NC-B-54 (Ronald McDonald House), facing west.

Photograph 8. Parking lot disturbance to Block 2 at Site 7NC-B-54 (Ronald McDonald House), facing east.

Photograph 9. Parking lot disturbance to Block 2 at Site 7NC-B-54 (Ronald McDonald House), facing east.

Photograph 10. Excavated Block 1 at Site 7NC-B-54 (Ronald McDonald House), facing south.

Photograph 11. Excavated Block 3 at Site 7NC-B-54 (Ronald McDonald House), facing east.

2.4 Phase III Data Recovery Laboratory Processing

All artifactual materials recovered during the Phase I survey and Phase II testing were obtained from the consultants who completed those studies, were re-analyzed, and then incorporated into the Phase III results to the extent possible. Due to varying degrees of equivalency in provenience, testing interval, and analysis, the earlier artifacts have a lower level of reliably identifying activity areas than do the Phase III data recovery artifacts; therefore, these earlier recovered artifacts were only used to aid in the formulation of general interpretations.

All artifacts recovered during the Phase III data recovery were bagged by provenience, marked with all pertinent provenience data, and returned to Skelly and Loy's Monroeville facility for processing and analysis. The processing included recordation, dry brushing, sorting, labeling, and/or re-bagging artifacts, as well as developing and labeling photographic materials. All recovered artifacts were dry brushed rather than washed to clean them of excessive dirt because presumptive blood testing was conducted. After dry brushing, the artifacts were labeled and/or tagged depending on size, condition, quantity, and type. A Delaware State Museum provenience/catalog control number was assigned for the site, with provenience designators and artifact identifier numbers assigned to the individual specimens.

2.5 Phase III Data Recovery Material Culture Analyses

Archaeological site 7NC-B-54 (Ronald McDonald House) yielded only lithic artifacts. Appendix A contains the artifact provenience and analysis catalogs, Appendix B contains the excavation block lithic analysis catalog, and Appendix C contains the cluster lithic analysis catalog. The analyses performed provided information to address the broad research issues of site use, adaptation, and settlement, as well as more site-specific research issues. For sites with excellent clarity, but limited quantities and types of artifacts, it is important to extract as many activity indicators as possible. These indicators included spatial relationships, assemblage characteristics (at the activity area level of resolution), and lithic and blood residue analysis to address the technological organization of the site visits.

Flaked stone specimens were analyzed according to categories based on Bordes and Crabtree (1969), Bucy (1974), Callahan (1979), and Crabtree (1972). Preliminary sorting identified specimens from each of the following general flaked stone classes: 1) cores and core fragments; 2) unmodified debitage; and 3) worked/formed implements. Debitage was then further separated into categories representative of reduction technology (biface thinning flakes

and core trimming flakes) and apparent stage of manufacture (primary, secondary, and tertiary). Notes were made if macroscopic use wear/utilization was visible on the debitage. Throughout the analyses, standardized forms were employed for data recording and all analysis information was entered into a computerized data base from which to run distribution and statistical information. The lithic assemblages from each activity area were analyzed separately and compared to one another in order to characterize the potential functions at the activity area.

There are many possible explanations of what happened during each visit to the site by pre-contact period peoples, as represented in the activity areas. Specialized analyses may strengthen or eliminate certain explanations. For example, blood residue should not be expected on large quantities of artifacts used in a location dedicated to processing plant foods; however, the same would not be true of a location used for butchering. On the other hand, blood residue might be expected on certain types of lithic artifacts, such as projectile points or knives in any setting, since it is assumed that these tools were used more than once prior to their discard. Presumptive blood residue screening is a relatively effective and inexpensive detection technique which was used to identify the presence/absence of blood residue on artifacts recovered from Site 7NC-B-54 (Ronald McDonald House). Fifty-four lithic artifacts, including some from each of the four excavated clusters and some from outside of the excavated clusters, were subjected to presumptive blood residue screening (Appendix D). Since the results of the blood residue screening on the Site 7NC-B-54 (Ronald McDonald House) lithic artifacts were negative, no follow-up speciation testing was warranted. Because presumptive blood residue screening remains experimental in its archaeological application, a blind test for the process was included as part of the Phase III data recovery investigations (Appendix E). The goal of the blind test was to eliminate questions about some potential contaminants and to demonstrate the effectiveness and efficiency of the process for large archaeological assemblages. In addition, because of the experimental nature of this analysis, a synthesis of previous blood residue studies was undertaken. Review of 33 archaeological reports from the states of Delaware, Pennsylvania, and Maryland were included in the synthesis, which presents the methods, findings, and shortcomings of the studies (Appendix F).

2.6 Project Curation

The project materials, resultant from the archaeological investigations at Site 7NC-B-54 (Ronald McDonald House), will be permanently curated with Delaware State Museums. The project artifacts and documentation will be prepared in accordance with the guidelines of

Delaware State Museums. The project materials will be delivered to Delaware State Museums upon acceptance of this report by DelDOT.