State Historic Preservation Office
Pennsylvania Historical & Museum Commission

PA State Historic Preservation Office (PA SHPO)

Guidelines for Archaeological Investigations in Pennsylvania

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Commonwealth Keystone Building | 400 North Street | 2nd Floor | Harrisburg, PA 17120 | 717.783.8946

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Introduction

Guidelines for Archaeological Investigations in Pennsylvania discusses how to conduct archaeological investigations in the Commonwealth of Pennsylvania. These are the guidelines by which the State Historic Preservation Office in Pennsylvania (PA SHPO) reviews and comments on archaeological survey and excavation conducted as part of the Environmental Review (ER) process for state and federal undertakings. This manual is not intended to comment on any other part of the environmental review process.

The *Guidelines* are organized by traditional archaeological phases used in cultural resources management projects. To provide clarification, a glossary and other helpful references are appended at the end of the document. The Table of Contents is linked to the many sections in the *Guidelines* for easier navigation; simply put your mouse over the section in the Table of Contents that you want view and click. Words contained in the glossary are indicated throughout the text as **bold, underlined blue words**, hyperlinked to the glossary. Items of special note, such as particular types of sites, are called out in highlighted text boxes as a reminder. Links throughout the report will deliver you to the appropriate website.

The PA SHPO conducts all Environmental Review consultation, including archaeological project review, through Pennsylvania's State Historic and Archaeological Resource Exchange (PA-SHARE). PA-SHARE is a geospatial database that manages all ER Project Records (PR), Resource Records (RE), Survey Records (SR), and Report Records (RP). Project consultation must be initiated through PA-SHARE on all ER projects prior to any archaeological investigation for projects subject to state and federal laws.

Information concerning the Environmental Review process is available on PHMC's website. PA-SHARE guidance can be found here in Using PA-SHARE to Consult with PA SHPO under Section 106 or Pennsylvania History Code.

Additional information about the PA-SHARE submission and data structure is available in Appendix A of this Guidelines document.

Philosophy and Purpose

Federal and state laws recognize the importance of cultural resources, including **archaeological sites**, and provide mechanisms to ensure that they are considered in the actions of government agencies. The federal legal mandates under which consideration of cultural resources most commonly take place include Section 106 of the National Historic Preservation Act (NHPA) of 1966, Executive Order 11593, and the Advisory Council on Historic Preservation's implementing regulations for Section 106 (36 CFR 800). In Pennsylvania, state legal mandates include the Environmental Rights Amendment, Article 1, Section 27 of the Pennsylvania Constitution, and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et. seq.

The NHPA defines the role of the State Historic Preservation Officer (SHPO) as providing comment and expert advice. In Pennsylvania, the SHPO is the Executive Director of the Pennsylvania Historical and Museum Commission (PHMC). The Pennsylvania State Historic Preservation Office (PA SHPO) is a bureau within the PHMC and the PA SHPO Director is the Deputy State Historic Preservation Officer.

It is within this bureau that projects under both Section 106 of the NHPA and the Pennsylvania History Code are reviewed. All consultation under these laws takes place through the online PA-SHARE system. Upon notification of an undertaking by an agency or its delegated representative, the PA SHPO reviews the action and provides comments to the agency regarding the presence or absence of resources and, when appropriate, the need for studies to locate or evaluate resources. For archaeological sites, recommended studies may include identification survey (Phase I), testing to evaluate significance (Phase II), and data recovery excavations (Phase III) or other alternative mitigation to mitigate adverse effects to National Register of Historic Places-eligible or listed archaeological sites. It is important to note that, under state law, the PA SHPO has authority to request archaeological investigations on lands owned by the Commonwealth of Pennsylvania.

The following guidelines are published by the PA SHPO as per Section 101(b)(3) (E and G) of the NHPA which requires the State Historic Preservation Officer, among other things, to "advise and assist, as appropriate, Federal and State agencies and local governments in carrying out their historic preservation responsibilities" as well as to "provide…technical assistance in historic preservation."

In this spirit, the guidelines are those under which the PA SHPO reviews and evaluates archaeological survey reports and their recommendations. These guidelines are intended to ensure consistency in survey methodology, analysis, report writing, evaluations of significance, and comparability of data. To this end, a phased approach to resource identification and evaluation is outlined. The phases correspond to the required tasks of identification and inventory (Phase I), evaluation (Phase II), and mitigation through data recovery or alternative mitigation (Phase III).

The PA SHPO encourages the use of new or modified approaches not specified in these guidelines, as long as these approaches are discussed with PA SHPO staff before the studies are initiated. Alternative approaches should be justified by reference to relevant literature on archaeological methodology and/or by reference to previous successful studies. In addition, the methods should provide results equivalent to or better than those provided by the standard methods.

Overview of the Archaeological Consultation Process and Environmental Review in PA-SHARE

This section of the Guidelines is intended as a brief overview for the non-archaeologist of how a typical project may progress with regards to review under Section 106 and the State History Code for archaeological resources.

Project consultation must be initiated through PA-SHARE for all ER projects prior to any archaeological investigation. PA-SHARE creates a Project Record (PR) through this initial consultation and all further project consultation Submissions, Survey Records (SR), Resource Records (RE), and Report Records (RP) are linked to the project and reviewed by the appropriate SHPO staff. When a Project is submitted for review it receives a Project Number, (2021PR02355 for example). Any materials that need to be reviewed by SHPO staff is called a "Submission" and are numbered sequentially under the Project (2021PR02355.001 is the initial submission for 2021PR02355). Project contacts are created during the initial project submission, and only project contacts can submit additional project submissions. **A project contact can add as many other project contacts as needed by using the Project Contact tool on the Submit tab in PA-SHARE.**

It should be noted that each project is unique and additional steps may need to be undertaken depending on the findings from each level of investigation. In addition, separate investigation and evaluation of above ground historic resources may be needed.

As noted above, consultation with the PA SHPO is required under Section 106 for projects needing federal funding, permitting, licensing or other approvals and for projects undertaken by federal agencies and/or on federal property. Consultation may be required under the State History Code for projects receiving state funding or state permits, projects on state land, and for the actions of state agencies or instrumentalities of the state.

It is important to identify the role of the PA SHPO with regards to the Section 106 process. The PA SHPO is a by-right consulting party that provides comment(s) at each step of the consultation process, at the request of and directly to the federal agency. The Section 106 implementing regulations identify the federal agency undertaking the project as the lead agency in all Section 106 consultation.

Some federal agencies have procedures in place to guide their projects through the consultation process. For these agencies, the process of consultation typically follows the implementing regulations closely. The Section 106 implementing regulations can be found linked here. Other federal agencies rely primarily on the SHPO to guide consultation and provide their comments on impacts to cultural resources to a delegate. Delegates are generally permit or grant applicants. For these projects, federal agencies may not become directly involved in the consultation process until adverse effects on cultural resources are identified. When undertaking a project that will require Section 106 consultation**,** it is important to contact the responsible federal agency prior to the start of the consultation process to gain an understanding of that specific agency's procedures.

Of note, the PA SHPO Archaeology Environmental Review staff is divided into review regions. Each region has an assigned archaeologist. As of August 2026, above ground environmental review staff review projects by agency, not region. County review region maps and above ground agency assignments are available on our website at: https://www.pa.gov/agencies/phmc/historic-preservation/environmental-review/environmental-review-contact-information.

SHPO environmental reviewers request all Phase I archaeological surveys through a "More Information Request" in PA-SHARE. If a Phase I archaeological survey is requested, the project applicant will typically contract with an archaeological consultant meeting the Secretary of the Interior's Standards for Archaeology to conduct the archaeological investigation. The PA SHPO maintains a list of firms and institutions who may have staff meeting these requirements.

Once contracted, the archaeological consultant should be added as a contact on the project in PA-SHARE (see above) and follow these Guidelines. It should be noted that the responsibility for findings of effects on cultural resources is the responsibility of the permitting or funding state or federal agency. As noted above, the consultant or project applicant should be in contact with the federal/state regulatory agency to ensure the work completed meets the policies and regulations of that agency. The results of the Phase I Survey should be provided to the PA SHPO, the regulatory agency (if requested), and any federally recognized Tribes and Nations that a federal agency has identified as consulting parties in the Section 106 process.

The PA SHPO has 30 days from receipt of the document to review and comment. If documentation of the work completed meets the Guidelines, and no archaeological sites are identified or all identified sites will be avoided, it will be the opinion of the SHPO that archaeological consultation for the project is complete. If complete documentation is provided and archaeological sites have been identified, the PA SHPO will either issue an opinion on site significance using the criteria for eligibility for the National Register of Historic Places (NRHP) or request additional (Phase II level) archaeological investigation to determine eligibility.

If National Register evaluation is requested by the PA SHPO, project applicants should obtain a Phase II work plan from their archaeological consultant and have the archaeological consultant submit the work plan to PA-SHARE for review by the regional review archaeologist. Evaluation should proceed once the work plan has been developed and approved by all appropriate parties. Results of the Phase II work should be provided in a report to the PA SHPO through PA-SHARE, the responsible regulatory agency, and any other consulting parties for review and comment. The PA SHPO has 30 days from receipt of the document to review and comment. If complete documentation is provided, the PA SHPO will issue an opinion on site eligibility. If all identified sites will be avoided or are not eligible for the NRHP, it will be the opinion of the PA SHPO that archaeological consultation for the project is complete.

If it is the PA SHPO's opinion that one or more archaeological sites are eligible for the NRHP, the PA SHPO will recommend that impacts to these sites be avoided. If avoidance is not possible, it will be necessary to identify mitigation measures for the loss of the resource and prepare and execute an agreement document, usually a Memorandum of Agreement (MOA) (see Phase III Guidelines). It is essential to have the full participation of the regulatory state or federal agency for the development of an agreement document such as the MOA, as that agency must be a signatory to the agreement. It may be necessary for that agency to seek additional consulting parties, including additional consultation with federally recognized Tribes and Nations. Once the MOA is executed and all agreed upon mitigation and public outreach stipulations have been met, it will be the opinion of the PA SHPO that archaeological consultation for the project is complete.

Survey In PA-SHARE

PA-SHARE categorizes all phases of archaeological investigation as Survey Records (SR), which appear on the map as light purple polygons.

Only the PA SHPO reviewer can initiate an investigation for ER projects. The investigation is opened when the PA SHPO responds to a project submission with a "Request for More Information." In their response, the reviewer will clarify the reasons why they recommended the investigation and will request a Survey Proposal, a New Survey, or an Update to an Existing Survey.

Once the reviewer makes their request, a Survey number is assigned (2021SR02355 for example) and the submitter or any project contact can enter details on the Survey Record (SR), Resource Records (RE), and Report Records (RP), and add a report document for review. PDF report documents should be attached to the Report Record.

PHASE I: Site Identification

Introduction

Phase I identification surveys are intended to find archaeological resources within a project area as per the *Secretary of the Interior's Standards for Identification* and 36 CFR 800.4. Professional judgement and experience are used by PA SHPO ER archaeology staff to delineate areas warranting Phase I survey (see below) and should be used by consultants to focus archaeological field work. Predictive modeling, including use of the Statewide Pre-contact Predictive Model, can aid in determining the potential for archaeological resources. In all cases, the methodology of a Phase I survey should provide an adequate effort to locate all potentially eligible sites. This includes the discovery of previously unrecorded sites and the confirmation of previously recorded sites.

The following Phase I guidelines are broadly divided into five sequential tasks: **site visit**, **background research**, **field testing**, **analysis**, and **reporting**. Many aspects of these tasks are common to any Phase I investigation; however, different site situations (e.g., pre-contact, historic, urban/industrial, and submerged) each have specific needs based on the different resources involved and the physical contexts in which they may be found. Description of these tasks is presented below, including specific procedural recommendations by site type.

Site Visit

The initial site visit should be conducted prior to development of the testing strategy as it will provide information not otherwise obtainable through maps and documentary research. The results of the site visit should be combined with background documentary research to develop the probability assessment for the project area as well as the Phase I survey methodology. Provided this methodology is justifiable and consistent with these guidelines, PA SHPO does not need to review the Phase I testing methodology prior to an archaeological survey. However, PA SHPO must review these when our office requests a Phase I methodology prior to the archaeological survey (typically for very large or complicated projects). PA SHPO will also review any Phase I methodology prior to implementation, if requested to do so.

The site visit should include consideration of local topography and environmental factors that have affected the formation and preservation of archaeological sites. Some of this information is available from topographic, soils, and geological maps and aerial photographs; however, there is no substitute for a detailed field examination of the local conditions. The extent of level areas and minor topographic features (slight rises, depressions, slopes), modern vegetation patterns, the extent of **alluvial** and **colluvial** deposition and erosion, and the presence of other significant environmental features (rock outcrops, mounds, springs, wetlands, stream confluences, etc.) should all be noted in the site visit. **Cairns** and cairn fields may be found in areas of excessive slope and should be documented.

In certain circumstances, a **geomorphological** reconnaissance (see below) should be conducted during the initial site visit to inform Phase I field methodology and determine whether deep testing is necessary to identify buried archaeological resources. Typically, a geomorphological survey is necessary in settings with the potential for alluvial deposition; however, geomorphology should also be considered in upland areas where colluvial or **aeolian** deposits could be present. The methodology for geomorphological testing should be determined in

consultation with a geomorphologist or qualified soil scientist. In general, the study should be sufficient to fully characterize all landforms within the project area.

Note: Specific to Submerged Sites

An initial site visit, when practical, should note the presence or absence of maritime architecture or features such as pilings, docks, customhouses, warehouses, or shipyards. Such structures and features help to place any submerged near shore resources within their proper historical context. They also help to guide the search for underwater sites and aid in delineating site boundaries. For projects farther away from shore or where depth is a concern, a site visit may not be useful or practical.

Note: Specific to Urban Sites

For projects in urban areas a site visit and subsurface testing is necessary to determine the presence of archaeological remains below the built environment. In these locations, visual evidence for archaeological deposits is usually non-existent, especially in areas like a parking lot, a rail yard, or an existing highway. In such cases, a geomorphological assessment utilizing mechanical **backhoe "soundings"** can be used to determine the presence of intact **cultural horizons** and/or archaeological deposits below zones of more recent disturbance. The evaluation of disturbance should be based on the sampling of the entire lot, the depth of the buried deposits, and the documented expectation of ancillary structures or **middens** in portions of the lot that may not be covered by current structures.

Note: Specific to Historic Sites

The site visit should document indicators of historic site formation and preservation. It is important to note that not all historic sites are recorded on historic maps. Above-ground structures, features, or ruins should be photographed. Less obvious indicators of buried historic sites should be documented including surface or near surface artifact concentrations and topographic or vegetational anomalies such as differential vegetation, crop marks and soil depressions, which may represent the locations of buried foundation remains, wells, and privies. Non-native vegetation, especially when clustered, can often denote an historic domestic site.

Background Research

Background research is an essential precondition for effective fieldwork and, in concert with the results of the site visit, will facilitate the development of informed expectations for where archaeological sites are likely to be identified within the project area (probability assessment) and will inform and guide the Phase I testing methodology. Further, the collected information will serve to provide the foundation for placing any identified archaeological sites within their local and regional contexts.

Phase I level background research should include, at a minimum, examination of the following:

1) Pre-contact culture histories (these histories should be based on current, up-to-date research)

2) Historic settlement history, including historic mapping and photographs
3) Cultural Resource Management (CRM) reports of relevant investigations
4) Pennsylvania Archaeological Site Survey (PASS) Files
5) Academic archaeological reports
6) Aerial photography
7) Environmental Data such as soils, hydrology, flora/fauna, climate, landform, and geology.

The information gathered from these sources should focus only on aspects relevant to the specific project area under consideration in the Phase I survey. Information on these topics can be found at locations such as the PA SHPO's files in PA-SHARE, the State Archives, the State Library and local libraries, historical society archives, academic research libraries, and through online resources. The information gathered through background research should be presented in the Background section of the Phase I Survey Report.

Regardless of the project size, archaeologists are expected to consider all relevant archaeological, historical, and environmental data. The exact geographical area from which background information should be drawn will vary according to the availability of comparative data. The geographical extent the background information is drawn from should be large enough to provide at least a minimal comparative data set. For pre-contact sites we recommend, at a minimum, consideration of the watershed/drainage area of the project.

Additional primary documents may need to be consulted at the Phase I level for projects in urban areas. These include:

1) Deeds
2) Tax assessments
3) Insurance surveys
4) Census data
5) Road dockets
6) City directories
7) Maps of buried utilities
8) Insurance and Atlas Maps

Note: Specific to Urban Sites

Adequate documentary research is an important factor in the identification of urban archaeological sites and should be performed as early in the project planning phase as possible. In addition to the background research detailed above, research on urban archaeological sites should also gather information on the development of the project area over time, from its pre-urban character through the various periods of urban use. This should include a consideration of the emergence and the effect of municipal infrastructure such as water, sewer, and trash disposal in the project area as well as an assessment of the possibility that earlier periods of construction have destroyed or significantly disturbed pre-existing archaeological sites or **features**.

Additional primary documents may need to be consulted at the Phase I level for projects in submerged areas. These include:

1) Deeds
2) Tax assessments
3) Insurance surveys
4) Navigation charts
5) Naval records
6) Admiralty records
7) Ships' manifests
8) Interviews with local watermen, the family members or descendants of watermen, and the local diving community may also prove to be valuable.

Note: Specific to Military Sites

In addition to the background research detailed above, research specific to military activities within the project area should be conducted when the project area may be the location of a military site. Information on the larger military campaign placing the battle or encampment in its local, regional, and national context should also be undertaken. At a minimum, additional documentary research should include an examination of the following resources when available:

1) General military histories and battlefield guides;
2) Military atlases, photographs, and studies of specific campaigns or battles;
3) Biographies, diaries, or individual records of participants;
4) Official government military records.

In addition to consulting the materials listed above, it is imperative that the archeologist consider the landscape of the battlefield from a strategic military perspective. In other words, the archaeologist should approach the terrain the way a military commander would, using KOCOA military terrain analysis. KOCOA stand for **K**ey/decisive terrain, **O**bservation and field of fire, **C**over and concealment, **O**bstacles, and **A**venues of approach/withdrawal (refer to www.tpub.com/seabee/3-29.htm for more information).

Note: Specific to Submerged Sites

As with Urban archaeological sites, documentary research is by far the single most important technique in the identification of underwater archaeological sites or resources. For this reason, and because it is both time and cost-efficient, documentary research should be performed as early in the project planning phase as possible. At a minimum, this research should consider the following:

1) A consideration of the pre-contact environment, focusing on pre-contact and early historic (contact or post-contact) shore/bank use and previous shore/bank lines.
2) A reconstruction of the development of the project area over time, from early pre-contact times to the twentieth century. For example, the effects of levee construction, dam construction, and dredging should be considered.
3) A discussion of the effects of maritime, riverine, and **lacustrine** development on the project area. In particular, the possibility that earlier construction destroyed or has significantly altered pre-existing archaeological sites or features through dredging, harbor expansion, pier/dock construction, etc. should be considered.

Probability Assessment

As noted above, the intensity, scope, and type of field testing will depend on the probability assessment for the different portions of the project area. The archaeological probability assessment for the entire project area should be developed by a qualified archaeologist and presented as part of the overall Background section of the Phase I report and as part of any requested survey proposal. This assessment will consider information gathered from the field view, such as previous disturbance, topography, and land use; information gathered from the Statewide Predictive Model (see below); and information gathered through the background research concerning historic and pre-contact site locations. The PA SHPO also strongly suggests that local informant interviews (see below) be conducted, and the results be considered when assessing archaeological probability within a project area.

The assessment will result in sectioning the entire project area into segments with no potential for the presence of archaeological sites, low potential, moderate potential, and/ or high potential. Areas that are considered to have no archaeological potential within the project area should be excluded from further field testing. These areas would include, but not be limited to areas that have been previously strip mined or areas previously disturbed within road or buried utility rights-of-way. Areas with low, moderate, and high potential for the presence of archaeological resources should be tested accordingly based on these Guidelines and the project area specific testing methodology. Mapping should be presented in the Background section of the report of investigations that illustrates archaeological potential, previous disturbance, and survey methodology for all portions of the project area.

Informant Interviews

As noted above, informant interviews are an important component for assessing archaeological probability within a project area and should be conducted. Informants can be landowners, local residents, members of the local Society for Pennsylvania Archaeology (SPA) chapter, local or county historical society members, members of federally recognized Tribes and Nations, or anyone else who may be familiar with the project area and the locations of recorded and unrecorded archaeological and historic sites. Known archaeological site locations should be recorded from informant data when possible, and available artifact collections from the project area should be examined and documented. (Photographs, drawings of representative artifacts, summary statistics, etc. are all appropriate.) The names of all informants should be recorded.

Documenting Disturbance through Background Research

It should be noted that, in some cases, the documentary research will indicate that potentially significant archaeological sites, features, or contexts were once present in the project area. However, it is often possible to use documentary research on previous land use to demonstrate that such sites, features, or contexts are no longer preserved. In cases where the documentary record is found to be sufficiently complete, and unambiguous in its demonstration of the destruction of cultural resources, a Record of Disturbance form supported by the appropriate documentation should be completed and submitted through PA-SHARE to the PA SHPO for review and/or supporting evidence of the disturbance should be included in the survey report. In cases where the background research is unclear concerning the preservation of archaeological sites, field testing will be necessary.

Field Testing

Methods

This methodology is a suggested minimum standard for undertaking Phase I archaeological survey. All methodologies should be derived from and justified by the background research and a site visit as described previously in this document. Alternative methods can be used in consultation with the PA SHPO. In developing sampling and testing strategies, keep in mind that the goal of Phase I field survey is to maximize the identification of archaeological sites in the project area. All sites, including small, low-density sites, may be eligible for the National Register. Further, sites which contain significant paleo-environmental data contributing to our understanding of cultural adaptations may also be eligible and should be given consideration. Weather is an important factor in performing good quality field work and it is strongly recommended that archaeological testing not be conducted during extremely cold and/or wet conditions.

Survey should begin with a surface inspection or walkover of the area(s) slated for survey during the initial site visit and be followed by either controlled surface collection, shovel testing, and/or test unit excavation, depending on the conditions throughout the project area. As described elsewhere, a geomorphological reconnaissance is necessary in certain circumstances to determine whether deep testing is necessary. All excavated soils should be screened through at least ¼ inch hardware mesh and excavation (when appropriate) should extend to a depth at which no archaeological materials can be found or at which the **vertical Area of Potential Affect** (APE) has been investigated to the point where project impacts would not affect any deeper archaeological deposits, should they be present. In general, all observed artifacts should be collected during a Phase I survey; however, for certain artifact types a sample can be collected (i.e., brick, window glass, plaster, etc.). Consult with the SHPO regional reviewer before instituting a sampling or alternative collection strategy.

1) A controlled surface collection should be conducted in areas currently under cultivation or that had previously been cultivated. To maximize artifact visibility, the field should be re-plowed, disked, and rain washed. All artifacts should be point plotted or collected in 5 meter or smaller grid blocks.

2) Shovel testing should be undertaken when plowing is not feasible or in areas which have not previously been plowed. Shovel tests should be hand excavated either as 0.5-meter x 0.5-meter squares or 0.57-meter diameter circular pits and should not extend deeper than 1 meter. The standard shovel test interval should be 15 meters on a grid system or 16 per acre. Medium and low probability areas may be tested at wider intervals of 25 or 30 meters provided that the testing strategy can be justified. Locations for shovel tests in low probability areas may be judgmentally selected rather than using a standard interval pattern. All shovel tests should be excavated in natural stratigraphic levels. In plowed upland areas with no potential for deep burial, the shovel tests should extend at least 10 centimeters into the subsoil (typically a B or C horizon developed in or derived from the breakdown of weathered bedrock) below the base of the plowzone. The purpose is to confirm the natural state of the horizon (as opposed to fill) and to catch any artifacts that may have become relocated downward through **bioturbation** and vertical drift.

   When archaeological resources are identified during shovel testing, additional shovel tests (radials) should be excavated in a cruciform pattern within the original testing grid to preliminarily define the site boundary. Radial testing should be undertaken at a 5-meter interval and the site boundary defined by two negative tests at this shortened interval.

3) Test unit excavation should be undertaken for areas in which the archaeologically sensitive soils extend deeper than 1 meter to a maximum OSHA-safe depth. Beyond OSHA-safe depth, the archaeologist can attempt to reach the base of cultural deposits by excavating a shovel test in the bottom of a 1x1 meter test unit or by stepping the test unit back to 2x2 meters or larger. Test units should be excavated on a 30-meter interval (four per acre). Soils should be excavated in 10-centimeter levels within natural strata. In very deep sites such as on major river floodplains, **trench-box techniques** can be used for safety purposes.

   Deep testing should continue to a depth indicated by a geomorphologist as not likely to contain archaeological resources. Often this depth will correspond to a Pleistocene surface. Projects which have a confined impact and where the depth of impact is restricted may only necessitate testing to a depth of a meter below the depth of impact. Ground water problems should be discussed with the PA SHPO.

Note Specific to Pre-Contact Sites

Stratified sites are of great importance in establishing and verifying regional and/or local chronologies, culture histories, and so forth. For this reason, a geomorphologist should be present on site at the beginning of a survey if there is a possibility that stratified cultural deposits may be present. The geomorphologist will be able to determine the depth of archaeologically sensitive soils and the depth to which testing should extend, based on soils.

Among the smallest archaeological resources are pre-contact isolated finds. These resources are potentially representative of larger concentrations of artifacts and may only be fully defined when tested at a very close interval. The purpose of such close interval radial testing is to provide adequate coverage and consideration of small sites of this type. For this reason, a 2.5-meter radial interval around isolated finds is recommended.

Because the behavior represented by these sites will, by nature, leave little archaeological signature, intervals of 5 meters or more may miss much or all of what remains.

Note Specific to Historic Sites

Standard Phase I field methods are sufficient to recover historic as well as pre-contact artifacts; however, in many instances the identification of an historic period site can be determined based on the presence of extant foundation ruins, surface depressions, or other historic period features at the surface. In these instances, the presence of a site can be established with little or no excavation and only a limited amount of testing may be necessary prior to the initiation of a Phase II investigation. Excavation of 1 by 1 meter test units or 50-centimeter-wide trenches may be appropriate if ground truthing of subsurface anomalies is deemed necessary. Remote sensing techniques should also be considered if burials or other subsurface features are likely, as in older church yards. Metal detector survey should always be used for sites on or in proximity to a battlefield and may also be used to help delineate other historic period archaeological sites. See Remote Sensing section below for additional details regarding metal detection survey.

Note Specific to Urban and Industrial Sites

In urban and industrial settings, the most important factor for the preservation of resources is previous land use history. This means that, in some cases, background research should be conducted prior to any site visit. The background research should focus on land use history to identify what significant resources could be present in the project area. The site visit should focus on determining the field strategy necessary to recover those significant resources.

If the background research suggests that archaeological resources may be present in an urban setting, the Phase I archaeological testing plan may include a comprehensive geomorphological assessment of the project area. The purpose of the geomorphological investigation is to define the depths of disturbed and fill soils and to assess the potential for buried archaeological deposits underneath disturbed soils. This must include specific recommendations concerning the archaeological potential of the project area and how any areas of such potential will be investigated. This work plan should be sent to the PA SHPO for review and comment.

Note: Specific to Submerged Sites

The purpose of this type of survey is to locate shipwrecks and other maritime features and, in certain circumstances, submerged landforms with the potential for pre-contact sites that have been inundated and buried. Specific guidelines and requirements are outlined below; however, given the unique nature of these resources, any methodology for submerged archaeological investigations should be developed in consultation with SHPO prior to the Phase I survey:

Initial investigations should commence with a geophysical remote sensing survey. Collection, processing, and interpretation of the raw geophysical data must be overseen and completed by an experienced maritime archaeologist.

The PA SHPO considers qualifications to supervise this work as an equivalency of the Secretary of the Interior's Standards for Archaeology. This includes, at a minimum, an advanced degree in Anthropology, Archaeology, or a closely related field with a focus in underwater or maritime archaeology and with three years of professional experience in this discipline, including a year of supervision. If significant anomalies are located and cannot be avoided, identification and verification (diver ground-truthing) must be undertaken by trained underwater archaeologists and can include preliminary documentation, probing, limited removal of overburden and/or visual assessment using a Remotely Operated Vehicle (ROV).

Remote sensing surveys should include, but are not limited to, use of side-scan sonar, magnetometer or gradiometer, sub-bottom profiler, and recording fathometer. At least three different techniques should be employed. The use of these types of instrumentation provides acoustic imagery of surface and subsurface features and detects the presence of both exposed and buried ferrous metal objects. These methods are used to discover anomalies that may include historic artifacts, cultural features, and/or submerged landforms potentially associated with submerged pre-contact sites.

Transect spacing will vary depending on conditions but should be no greater than 30 meters (100 feet) and should provide a minimum 100% overlap of survey lines for 200% coverage. Survey transects should be recorded with Differential GPS and the data presented in a GIS format. Both raw and processed data should be included in the Phase I report. Magnetometer and sonar data should be presented as a contour map and sonar mosaic printed to a scale not exceeding 800 feet per inch. Information should be presented in either large format or foldout maps.

For more information, please consult the Bureau of Ocean Energy Management (BOEM) Office of Renewable Energy Programs Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585. While the BOEM guidelines are not directly applicable to the waters of Pennsylvania, they provide good guidance regarding the types of work to be undertaken and instrumentation specifications.

A report of the investigation and results is to be submitted to the PA SHPO for review upon conclusion of field activities. If additional testing is necessary, the activities should be developed in consultation with the Regional Review Archaeologist at the PA SHPO.

Geomorphology

Geomorphology is the study of how landforms are created; it identifies soils that are of the appropriate age to contain archaeological material. It looks at the history and composition of landforms by examining topography, sedimentary history, and soil characteristics and genesis. For archaeological purposes, a geomorphological investigation is necessary for any project with the potential for archaeological material buried within and/or under alluvial, colluvial, or aeolian sediments. Alluvial soils can occur along watercourses of almost any size and colluvial soils are found along the bases of slopes. Some landforms, such as large **alluvial fans**, can contain both alluvial and colluvial sediments. Aeolian deposits are not common in Pennsylvania and are most likely to be found in the Coastal Plain and along parts of the Lake Erie Plain. Some probable aeolian deposits of Holocene age have also been found in localized areas of the main stem of the Susquehanna River. When any of these three types of soils are present, geomorphology will help determine the depth to which archaeological excavation should extend so that buried sites will be fully considered.

In urban and industrial brownfield settings, geomorphology can help determine whether intact soils containing early historic and/or pre-contact sites are present below historically disturbed soil levels. If intact soils are present, this type of study can determine the depth to which archaeological investigations should extend. In consultation with the PA SHPO, historically disturbed soils can be mechanically stripped off to help facilitate easier and safer archaeological excavation. Care should be taken when mechanically removing disturbed soils since historic archaeological sites can be present within historic fill deposits.

Geomorphological testing can include auger boring, mechanical trenching, observing cut banks, and observing the profiles of archaeological test units or shovel tests. In any case, testing should extend through Holocene and Late Pleistocene soils that have the potential to contain buried archaeological material.

Geomorphological reports can be submitted in PA-SHARE as separate stand-alone reports, as part of Phase IA reports, or as part of full Phase I, II or III reports, depending on the nature of the findings and the project.

Testing must be undertaken or, at the very least, supervised in the field, by qualified personnel. The PA SHPO considers qualifications to supervise this work, at a minimum, to include an advanced degree in geology and soil science with interdisciplinary study of anthropology and archaeology.

Documentation of Disturbance Through Field Testing

Disturbance, or the loss of **archaeological integrity**, in part or all of a project area should be documented as part of a Phase I investigation. This should include a discussion of the type of activity that has caused the disturbance and documentation of the horizontal and vertical limits of the disturbance. It should be demonstrated that no pre-contact or historic period cultural remains could be present below the level of disturbance. Previously documented disturbance, identified through background research, should always be confirmed through a field visit. Disturbance visible at the surface can generally be documented through photographic recordation. Aerial photographs of the project area may also prove to be helpful in this regard.

Vertical depth of disturbance can be documented through the judgmental excavation of auger tests; shovel tests; test units; or, in some cases, back hoe trenches. For areas with alluvial or colluvial sediment accumulation, a geomorphological investigation may be necessary. Soil descriptions coupled with profile drawings and/or profile photographs should be included with the Phase I report.

In regard to historic-period occupations, it is important to note that fill levels can be evidence of changes in spatial utilization through time. Efforts should be made to date these deposits based on the presence of **diagnostic** artifacts to document changes through time on the landscape. It is important to remember that fill levels without historic integrity can cap National Register eligible resources, especially on urban or industrial sites.

If the entire project area is disturbed to the extent that archaeological survey would not be productive, the Record of Disturbance form should be completed and sent to the PA SHPO for review.

Remote Sensing

Resistivity, **magnetometry**, sonar and radar scans, chemical tests, and other remote or indirect sensing techniques have been refined and used with some success in many cases, such as historic cemeteries, pre-contact pits and hearths, and fortification features. The success of these techniques is highly dependent on factors such as bedrock, soil conditions, feature size and composition, the depth of the feature, and the skill of the analyst. Some conditions preclude the use of these techniques: bedrock at or near the ground surface; consistently or periodically high-water table; and/or soils with **hardpans**, **fragipans**, gravel concentrations, and high iron content. Because these techniques can be highly variable in their success and appropriate application, PA SHPO suggests consultation with the Regional Review Archaeologist*, as well as specialists in the planned technique*, prior to use of these techniques in the field. Specific guidance for the use of metal detectors in Phase I archaeological survey is presented below.

Metal Detecting

Metal detector survey can be used on any historic or contact period site where it is expected that metal artifacts are present. In general, metal detector survey should be used for the identification of sites at the Phase I level or the definition/location of activity areas or features within a site at the Phase I or Phase II level. Specifically, as an example for historic sites, metal detecting can be useful for locating outbuildings and fence lines that may not be visible at the surface. Identification of these ancillary features can greatly enhance the accuracy of site boundaries.

Metal detector survey should be used in tandem with standard site identification methods such as documentary research, surface survey, and shovel testing. For an area of military action, such as a battlefield (the core battle area) and/or encampment sites, metal detector survey should be used in all circumstances as it has been found that standard site identification methods, such as shovel testing, are not adequate for location of these types of sites. This circumstance is specifically detailed in Melissa Connor and Douglas Scott's 1998 article in *Historical Archaeology* (32(4):62-82). It is important to note that for non-military sites metal detecting cannot be used as a substitute for other site identification/evaluation methods, but should be used as a targeted, supplemental technique. Research designs utilizing metal detecting should be discussed in advance with the regional review archaeologist.

Metal detector coverage should be based on the research objectives, but at a minimum be conducted systematically along 1.5-meter lanes within the identified coverage areas. Lanes should overlap to ensure coverage at the lane edge. Vegetation and leaf litter may need to be removed within the survey lanes to allow for adequate coverage. Plastic pin flags should be used to mark "hit" locations and locations for potential excavation. All hit locations should be mapped to show artifact distribution.

Reporting the results of metal detector survey should include overall methodology, survey coverage, and a discussion of how that methodology is appropriate for the survey situation. If recommended minimum methods cannot be used, the methodology section should include information on the situation and how the methods were adjusted to accommodate. An example of a circumstance where this may apply is an area of heavy vegetation that may necessitate a project specific survey coverage method. Survey equipment type and personnel/qualifications should also be discussed along with a discussion of time spent in detection and set up.

Mapping graphics should illustrate the width and orientation of detection lanes, pin flag locations, as well as any excavations placed for ground truthing. The ground truthing strategy should be specific to the circumstances of the survey, and justification for its use discussed in the survey methodology.

Metal detecting equipment used for survey should at a minimum include the following: 1) the ability to discriminate between metal types; 2) **ground balance capabilities**; 3) port for headphones; and 4) the ability to pin point. The use of good quality noise canceling headphones is highly recommended. Although no specific make or model detector is recommended, the technician operating the equipment should be familiar with the equipment as detector features and operations vary widely.

Archaeologists or technicians operating the metal detecting equipment should have at least 40 hours of hands-on field experience in metal detecting. It should be noted that in some areas of the Commonwealth local avocational detectorists groups have members who meet or exceed this experience. These groups can be a good resource both for helping to identify known site locations as well as locate experienced metal detectorists. The supervising archaeologist and the archaeologist responsible for the analysis and interpretation of the survey results should have an *additional* 60 hours of hands-on field experience and have completed a metal detecting training course. Courses specifically applicable to metal detection for archaeological investigation are offered by the non-profit group AMDA (Advanced Metal Detecting for the Archaeologist). These courses are certified by the Register of Professional Archaeologists (RPA) program as a continuing professional education class.

Monitoring

Monitoring is the stationing of an observer to identify archaeological resources revealed during construction. Monitoring is most often used as part of an avoidance plan to ensure that archaeological resources identified during the Phase I or II survey and slated to be avoided are not inadvertently impacted during construction activities. Monitoring should be undertaken by a professional meeting the Secretary of the Interior's Standards for Archaeology. The result of all monitoring activities should be reported to the PA SHPO at the conclusion of monitoring in a Avoidance Monitoring Form or a report submitted through PA-SHARE.

It is important to note that monitoring alone does not meet agencies' legally mandated responsibility to identify all significant resources, to consider the effect of projects on them, and to provide the PA SHPO and Advisory Council an opportunity to comment.

Preservation in Place

Preservation in place is defined as encapsulation of a known archaeological resource below some amount of fill. Encapsulation can allow for some project-related use of the area into the future. This avoidance technique can be successfully utilized for archaeological site avoidance in very specific situations.

Successful preservation in place generally consists of placing clean, shallow fill over a site area and subjecting that area to passive or low impact (i.e., low potential for compaction) use. The fill overlying the site should not threaten to damage the site through compaction, changes to the water table, or changes to soil chemistry. These changes can damage archaeological features and some types of artifacts. For situations where long term impacts to preserved archaeological resources are unknown, monitoring of the archaeological site over time

should be part of the avoidance plan. As with all avoidance plans, consideration of preservation in place as an avoidance tool should be discussed with the Regional Review Archaeologist and the regulating agency.

It is important to note that preservation in place cannot be used in place of archaeological survey.

Statewide Pre-Contact Predictive Model

The Statewide Pre-Contact Predictive Model was developed as a joint venture between the PA Department of Transportation (PennDOT) and the PA SHPO in 2014. Construction of the model consisted of sectioning the state into 10 regions based on Physiographic Zone and watershed, identifying, and building the statistical model(s) by region using pre-contact site locations from the PASS Files, and analyzing relevant environmental factors.
A re-analysis of the model was conducted by The Penn State University in 2025. These results are in PA-SHARE as report 2025RP00305. The results of this reanalysis by region should be considered when using the Statewide Predictive Model as part of project planning. Phase I archaeological survey testing methodology should never rely solely on using the Statewide Pre-Contact Predictive Model.

Analysis

Artifacts

The artifact analysis for Phase I surveys should record the basic facts about the artifact collections and present them in a summarized manner that allows for understanding the potential significance of any site identified. The basic facts for any collection should include:

1) The tabulation of all artifacts by provenience unit, stratum (or arbitrary level), and feature
2) Artifact material (e.g., lithic, ceramic, metal, glass, etc.). Specify named material types if known (e.g., Onondoga Chert, Flint Ridge chalcedony)
3) Artifact functional type (e.g., projectile point, flake, nail, button, etc.)
4) Total artifact count by site
5) Total artifact counts and percentages by functional and material categories
6) Total artifact count by frequency per unit area or volume (e.g., square meter, cubic meter, etc.)
7) Diagnostic artifact identification specifying cultural/chronological types, if known (e.g., Brewerton Corner-notched, creamware, Owens scar, etc.). Photographs of all diagnostic points and sample historic diagnostic artifacts should be included.

Phase I Site Identification and Boundary Definition

The identification of an archaeological site based on the recovery of artifacts and/or the identification of features should be based on the guidance provided in the site identification criteria (Appendix C).

To receive a PASS number for a new archaeological site identified during a survey, the site must be added to the survey record and submitted to the SHPO via PA-SHARE. For more detailed information about adding a site to a survey record please see the tutorial "Submitting Survey, Resources, and Reports for Environmental Review Archaeological Investigation."

Phase I site boundaries should be defined based on the location of recovered/observed artifacts and features. At a minimum, the site boundaries should encompass all of the artifacts and features associated with a particular site. At the Phase I level, boundary definition should heavily consider landform and topography. Larger site areas, including potentially multiple artifact concentrations more than 50 feet apart, should be grouped appropriately within the same landform. Should additional investigation at the Phase II level show that multiple sites exist, the site can be split, and a second site trinomial can be assigned.

For projects limited to a narrow transect through a portion of a site (e.g., pipeline or sewer line rights-of-way or highway sliver-takes) the extent of the site within the right-of-way should be defined. The likely extent of the site beyond the right-of-way should be estimated based on topographic or other features, such as landforms and waterways. For historic sites, associated standing structures and other historic features should be included within the site boundary.

Reporting

The results of the Phase I survey should be presented in a report meeting the standards and specifications of the PA SHPO and the Secretary of the Interior's Standards for Archaeological Documentation (see Reporting in PA-SHARE). The report serves as the scientific record of the investigation and is the basis for recommendations by the consultant as to the adequacy of the Phase I survey and the need for additional work. PA SHPO staff will review the reports and comment on the consultant recommendations.

When a project involves both archaeological and historic structures survey, the two efforts should be coordinated. In this manner, the information gained from the historic structures survey will be incorporated into the historic contexts for the archaeological investigation. This coordination will aid in the prediction of the types and locations of historic sites to be expected and the preliminary assessments of any historic archaeological findings. However, these two different types of survey should be written up as separate reports and presented under separate submissions, as the report formats are different.

In some circumstances, it may be desirable to split the Phase I effort into two parts: Phase IA and Phase IB. The Phase IA report would include the background research; results of the site visit; probability assessment or predictive modeling; and, potentially, geomorphology. The Phase IB effort would consist of field work in areas identified for testing through the Phase IA effort. Should the Phase IA effort reveal that there is no potential for the presence of archaeological sites within the entirety of the project area, a Phase IA report or Record of Disturbance Form, as appropriate, should be completed and submitted to our office for review. Should the Phase IA evaluation reveal that all or some portion of the project area should be subject to Phase IB field testing, it is preferred that the Phase IA evaluation results be presented along with the Phase IB field testing results under one submission.

Avoidance Plan

Avoidance plans document how project activities will avoid impacts to archaeological resources. The avoidance plan should consist of text documenting the avoidance activities as well as mapping as appropriate. Avoidance plans should be stand-alone documents provided through a separate PA-SHARE submission.

Avoidance activities commonly consist of:

1) Relocation of ground disturbing activities associated with the project, with or without buffer zones.
2) Fencing along the edge of the planned area of disturbance in the vicinity of the archaeological resource
3) Monitoring (see below)
4) Marking archaeological sites as "Sensitive Areas" on project plans.
5) Horizontal Directional Drilling (HDD) with accompanying drill failure plan (also known as a **Frac-out Plan**).
6) Geotextile and fill as per PennDOT specifications. These specifications can be found in the PennDOT Cultural Resources Handbook, Publication 689.
7) Other temporary surface protection (e.g., timber mats and similar), in discussion with Regional Review Archaeologist
8) Preservation in place (see below).

All avoidance plans should be discussed with the Regional Review Archaeologist because not all avoidance activities can be used in all situations.

PHASE II: Site Evaluation

Introduction

The purpose of Phase II testing is to evaluate a site's National Register eligibility through a more thorough sampling of the archaeological deposits identified during Phase I Survey. Under federal and state laws, only National Register eligible sites are afforded further consideration in the consultation process. Consequently, National Register evaluation of archaeological sites is necessary to determine which sites are eligible and will be potentially adversely affected by a project's activities, and which sites are not eligible and warrant no further consideration.

For all historic properties, National Register eligibility is based on a property's significance and integrity. To be significant, a property must meet at least one of the National Register Criteria for Evaluation as discussed in the National Register Bulletin How to Apply the National Register Criteria for Evaluation. To have integrity, a property must be able to convey its significance. While archaeological sites may be eligible under any of the four Criteria, they are most often eligible under Criterion D for the important information they may contain. The National Register Bulletin Guidelines for Evaluating and Registering Archeological Properties outlines the five primary steps in a Criterion D evaluation:

1) Identify the property's **data set(s)** or categories of archaeological, historical, or ecological information.
2) Identify the historic **context(s)** that is the appropriate historical and archaeological framework in which to evaluate the property.
3) Identify the important **research questions** that the property's data sets can be expected to address.
4) Take archaeological **integrity** into consideration; evaluate the data sets in terms of their potential and known ability to answer research questions.
5) Identify the **important information** that an archaeological study of the property has yielded or is likely to yield.

If a property's **data set(s)** contain the information and **integrity** needed to answer **research questions**, as identified through placing the site within its **context**, then the site has the potential to yield **important information** and is significant.

It is important to note that for sites or properties eligible under Criterion D, integrity requirements, specifically archaeological integrity, will relate directly to the types of research questions defined as part of the Phase II investigation. Overall, however, the following site characteristics are considered to be good indicators that a site area may retain archaeological integrity:

1) Spatial patterning of surface artifacts or features that represent differential uses or activities;
2) Spatial patterning of subsurface artifacts or features; and
3) Lack of serious/significant visible disturbance to the property's archaeological deposits.

Each archaeological site that undergoes a Phase II investigation should be evaluated for both its significance and integrity. This evaluation should be provided in the Recommendations Section of the archaeological report as an argument for or against the site's National Register eligibility. If the site is being recommended as eligible for the National Register, the argument for site eligibility should also reference which Criteria the site should be considered eligible under. A recommendation for National Register eligibility for each evaluated archaeological site is necessary for a submitted report to meet these Guidelines.

PA SHPO Opinion on Eligibility

The PA SHPO opinion on National Register eligibility of archaeological sites is also determined by evaluating each site based on the National Register Criteria. Specifically, the PA SHPO opinion will include consideration of:

1) Temporally diagnostic artifact types or artifact assemblages;
2) Artifact assemblages that identify site function;
3) A representative artifact sample sufficient to characterize the horizontal and vertical extent of the site;
4) The presence or absence of features;
5) For historic sites, the quality of the documentary record;
6) Archaeological integrity.

The following section includes guidance on Context Development, Field Methods, and Analysis.

Context Development for National Register Eligibility

Since most archaeological sites will be evaluated under Criterion D, the information below focuses almost exclusively on context development for that Criterion.

Contexts are the analytical framework within which a site's importance can be understood, articulated, and assessed. For a particular site, the context should:

1) Identify the time period, the geographic area, and the site type into which the site falls, making sure to identify the research questions that the site may ultimately address;
2) Draw on additional documentary research, beyond the background information presented in the Phase I report;
3) Synthesize the background data collected, and;
4) Present the context.

Once the context is built, a discussion of how the site under evaluation fits within the context should be provided. This discussion will provide the basis for the site's National Register significance as discussed in the Site Evaluation and Recommendations Section of the Phase II report.

Note: Specific to Pre-Contact Sites

In addition to doing the above, contexts specific to pre-contact sites should focus on the watershed model and should include discussion of regional or local settlement patterns, geomorphology, soils, local climate, and biota as they relate to site formation and preservation processes.

Note: Specific to Historic Sites

In addition to doing the above, contexts specific to historic sites should provide an understanding of the historic character of the project area including the history of property ownership, occupation, land-use, and development. Historic site contexts should also include documentation of significant persons or events associated with the project area or site.

Context and Research Questions

The context should take into account the type of site that is being evaluated, including its time period and its location, and should be limited to the information needed for site evaluation. It should not be simply a history but should instead identify and explain the significant historic themes that characterize the area surveyed. All other context parameters will be site-specific.

Research questions are a set of questions formulated to guide the scope, methods, and techniques of an archaeological investigation. These questions should be based on the type of information previous investigations of similar sites yielded as well as gaps in the general archaeological knowledge or understanding of a particular time period, site type, location, and so forth. Some standard research questions for pre-contact sites address settlement patterning, inter- and intra-site artifact patterning, seasonality, trade, and economy. Some standard research questions for historic sites address socio-economic status, gender, ethnicity, trade, and market spheres. Each Phase II site evaluation, as presented in the Site Evaluation and Recommendations section of the report, should include a discussion of potential research questions and the ability of the site data to provide information relevant to each question.

Additional Documentary Research

Phase II documentary research should be conducted prior to any field testing as this information is critical to developing a sound research design, including appropriate field testing strategies and techniques. **In addition** to the background research conducted for the Phase I survey, Phase II context development should explore the following types of sources:

1) Cultural Resource Management Reports (Survey Report Files) and PASS and Archaeological Site forms (Resource Files) are available in PA-SHARE.
2) Primary documents including, but not limited to, deeds, tax assessments, insurance surveys, census data, road dockets, city directories, maps and atlases, city plots, building permits, lithographs, and photographs.

3) Secondary literature including, but not limited to, journal articles, research reports, regional syntheses, and books.
4) Briefs of title (for historic archaeological sites).

Note: Specific to Urban Historic Sites

For urban historic sites, attention should be given to the history of city services (water, sewer, and trash collection) as they affect the nature of the archaeological record. In addition to the sources listed above, researchers should consult ordinances and resolutions, health department records, utility company records, and other municipal records and maps. Intensive background research in urban areas has provided for some very effective predictions concerning the locations and depths of significant archaeological deposits, particularly for projects in cities such as Philadelphia and Pittsburgh. The differences between public policy and actual practice, however, should be recognized in attempting to use documentary data to predict the location of archaeological resources.

Note: Specific to Submerged Historic Sites

For submerged historic sites consisting of the location of a shipwreck, attention should be given to documentation of the vessel's history, construction, and importance. For other cultural remains, such as rock-filled timber cribs for city water intake, **chevaux-de-frise**, or submerged maritime commercial sites, research should focus on their construction and purpose and include the history of their industry/technology.

For submerged sites, specialized repositories and sources may need to be consulted in addition to standard historic records. Depending on the type and history of the site, research in repositories such as the National Archives, Library of Congress, or the archives of the U.S. Naval War College may be appropriate.

Field Methods

Phase II field methods for each site should be based on the results of the Phase I survey and should result in testing that meets the following goals:

1) Recovery of a sufficient sample of information about the site to support a National Register Determination of Eligibility (DOE) opinion.
2) Development of research questions specific to the site type, data sets, features, and context as applicable.
3) Confirmation of the site boundary. More information regarding site boundary definition can be found in the Phase II Analysis section.
4) Identification and classification of features if present.
5) Analysis of horizontal and vertical intra-site artifact and feature distribution.

6) Site, context, and feature dating through diagnostic artifacts, artifact assemblage analysis, geomorphology, and relative dating techniques. More information on dating can be found in the Phase II Analysis section.
7) Recovery of botanical, pollen, and faunal information. More information on botanical, pollen, and faunal remains can be found in the Phase II Analysis section.

Phase II testing should meet the Phase II goals as stated above, while not unnecessarily disturbing more of the site than is needed to determine National Register eligibility. These guidelines denote a target range for level of effort rather than identifying a set, specific standard level of effort. The rationale behind having a range of effort is to incorporate flexibility within site evaluation. If data sufficient to characterize the site as eligible is obtained within the lower end of the effort range, then Phase II investigations should be halted, and the site recommended as eligible. If data sufficient to characterize the site as eligible has not been recovered at the high end of the effort range, then the site should be recommended not eligible.

The following sections detail standard methodologies specific to both historic and pre-contact sites. It should be noted that alternative methods can be used in any circumstance if those methods can be explicitly justified and shown to be at least equivalent to the standard methods presented within these Guidelines. The use of any alternative method should be discussed with the Regional Archaeological Reviewer prior to implementation of that method in the field.

A Phase II work plan should be developed in consultation with the Regional Archaeological Reviewer and submitted for review in PA-SHARE prior to field investigations. All work plans should include adherence to OSHA safety standards. Nothing in these Guidelines is intended to involve unsafe working conditions.

Unstratified Sites

Plowed Contexts

For sites that are located within plowed, unstratified (typically upland) contexts a minimum of two controlled surface collections should be performed. The field should be plowed, disked, and rain-washed before each collection to produce adequate visibility for the recovery of artifacts. If the site was subject to a controlled surface collection as part of the Phase I survey, that surface collection can be counted as one of the two necessaries for Phase II evaluation. Surface collection should be conducted as a grid of small interval collection blocks (5 meter or less) or, alternatively, by piece-plotting surface artifacts using a transit/total station or GPS tied to a permanent datum and grid system. In either case, all observed artifacts should be collected for most artifact types. For certain artifact types a sample can be collected (i.e., brick, window glass, plaster, etc.). Consult with the SHPO regional reviewer before instituting a sampling strategy.

After the surface collections are complete, the plow zone should be mechanically stripped to look for cultural features. A range of 10 to 25% of the affected site area (i.e., the site area within the APE) should be stripped, cleaned with shovels and/or trowels, and examined for the presence of features. If features are located after 10% of the site has been stripped, then this procedure should cease, and the site should be evaluated for its National Register eligibility. If features have not been located, stripping should continue either until features are

found or until 25% of the site area within the APE has been stripped and examined. Mechanical removal of the plow zone should always be carefully monitored by an archaeologist to ensure that the excavation does not extend below the interface between the plow zone and the subsoil. Of note, it should not be assumed that there is a clear correlation between surface artifact distributions and subsurface features – this correlation, if present, should be demonstrated by testing.

Unplowed Contexts

For un-stratified sites located in areas where visibility is restricted by vegetation cover, where plowing for controlled surface collection is not possible, where the potential for undisturbed topsoil exists, or where historic archaeological features are visible at the surface, Phase II testing should consist of hand excavated test units. Shovel tests can be used for boundary definition. The excavation sample should range between 3 and 10% of the total site area within the project area. This sample includes excavation previously completed as part of the Phase I survey. It is thought that an artifact sample of this size is necessary to sufficiently characterize a site (Klein 2001, Shott 1987).

Note: Specific to Pre-Contact Sites

Phase II survey work for pre-contact sites should include close-interval shovel testing at a five meter or smaller interval to sample the horizontal distribution of artifacts across the site area and to refine the site boundaries. Following shovel testing, 1x1 meter test unit excavation should proceed until the total sample level of between 3 and 10% (as noted above) is reached.

Note: Specific to Historic Sites

Phase II survey work for historic sites should include excavation units, hand excavated trenches, and/or shovel tests placed to refine the site boundary, search for features not visible at the surface, sample visible site features, provide information on artifact distribution across the site, and gather information on landscape changes and spatial utilization of the site through time. The distribution and type of testing will be site-specific and should consider any documentary evidence for the location of features. The PA SHPO strongly recommends consulting with the Regional Review Archaeologist when developing the Phase II work plan for historic sites.

For some historic sites, especially urban or industrial sites, fill deposits will be present that are not part of the potential significance of the site. This determination should be made as part of the Phase I survey of the site. If it is not confirmed during the Phase I survey, it should be an early consideration of the Phase II survey. If these types of deposits are identified, mechanical removal can be considered within the Phase II work plan to search for features, facilitate the placement of hand excavated tests, or enhance site safety. Emphasis will be placed on the reasonable and judicious use of mechanized equipment as a practical aid in conducting time and cost-effective archaeological excavation. This equipment is a complement to, not a substitute for, more traditional archaeological field methods. It should also be noted that if fill deposits that are not part of the potential significance of the site are identified, it may not be necessary to screen these deposits through hardware cloth. The need to screen samples of the material should be assessed on an individual basis. The use of mechanical equipment in Phase II excavation, and the need to screen mechanically removed fill deposits

should be discussed in advance of field work with the Regional Review Archaeologist during development of the Phase II work plan.

Stratified Sites

The presence of stratified archaeological deposits and the depth of testing necessary should have been identified at the Phase I level. The Phase II testing for stratified sites should consist of 1x1 meter test units and/or block excavation sampling of between 3 and 10% of the total site area within the project area. This excavation sample includes excavation previously completed as part of the Phase I survey. All identified cultural levels should be sampled. In cases of very deeply stratified sites, consult with the Regional Review Archaeologist prior to finalizing the work plan.

Note: Specific to Submerged Historic Sites

The Regional Review Archaeologist at the PA SHPO should be contacted if the results of the Phase I investigation indicate that submerged archaeological resources exist or are likely to exist in the project area and that those resources may be affected by the proposed undertaking. The development of a physical testing program should be undertaken in consultation with the PA SHPO and should be designed to be appropriate for the specifics of the resource and the conditions in which survey will be undertaken.

As with Phase I survey, a Phase II investigation must be overseen and completed by an experienced maritime archaeologist. The PA SHPO considers qualifications to supervise this work as an equivalency of the Secretary of the Interior Standards for Archaeology. This includes, at a minimum, an advanced degree in Anthropology, Archaeology, or a closely related field with a focus in underwater or maritime archaeology with three years of professional experience in this discipline including a year of supervision.

Feature Excavation

To ensure comparability of results, certain procedures should be applied in the treatment of all archaeological features encountered in Phase II testing, unless alternative methods are discussed prior to fieldwork with the Regional Review Archaeologist:

1) Prior to excavation, features should be troweled and cleaned to expose them completely, mapped in plan view, and photographed.
2) Features should be sectioned and profiled by hand to reveal contours and stratigraphy. Profile drawings and photographs should be made.
3) If stratified fill is apparent or suspected, the feature should be excavated in natural stratigraphic levels or appropriate arbitrary levels (10cm or less), with plan drawings and photographs as appropriate.
4) A sample of fill not less than 3 liters in volume should be recovered from each feature for **flotation** or from each discrete level within a feature. The PA SHPO recommends that 25-50% of the fill from each feature be collected for later sampling, flotation, and analysis (100% if less than 3 liters). For historic features, the fill sample collected may be less than 25-50% if the context and comparative data suggest that a large sample would be redundant or unproductive.

5) All features should be assigned unique and consistent feature numbers.
6) All artifacts recovered from features should be bagged and labeled by provenience unit and feature number.

Note: Specific to Historic Sites

For historic foundation remains, unit or trench excavations should at a minimum bisect the foundation, sampling both the interior and exterior contexts. Excavation in this manner should: 1) document a stratigraphic cross section of the feature; 2) identify the presence or absence of associated use-surface or contexts (i.e., the historic ground surface or a builder's trench); 3) sample interior fills and identify the presence or absence of a cellar; and 4) identify the presence of absence of intact interior use surfaces or deposits beneath interior fills.

Sealed features that may contain a large quantity of artifacts, such as privy or well shafts, may not be completely excavated at the Phase II level. The emphasis in this phase should be on recording and evaluating the presence of significant archaeological levels within these types of features. This should result in the partial excavation of the feature during the Phase II survey with the remainder of the feature excavated as part of the Phase III data-recovery excavation if the site is eligible. A probe may be used in these cases to determine the maximum depth of the feature and aid in the development of the Phase III data recovery plan. In circumstances where the security or stability of the feature is in question, it may be necessary to fully excavate the feature when it is located, as part of the Phase II survey. The Regional Review Archaeologist should be consulted in this circumstance.

Analysis

Artifacts

The artifact analysis for Phase II evaluations should be undertaken specifically to produce results that can be used for the assessment of the site's National Register eligibility. The precise nature of the analysis needed will thus depend on the site context and potential research questions. Certain analyses, however, are necessary to curate and stabilize the collection and assess overall data potential. The analyses listed below should be undertaken for all Phase II evaluations and should include all of the artifacts collected as part of Phase I and Phase II fieldwork:

1) The tabulation of all artifacts by type, provenience unit, stratum (or arbitrary level), and feature.
2) The categorization of all artifacts in a manner that allows for comparisons with other sites and other artifact collections.
    a. For stone tools, this includes classification by functional/technological/morphological type and raw material.
    b. For pre-contact ceramics, this includes classification by type/ware and temper.
    c. For historic artifacts, this includes classification by functional and material classes as well as by diagnostic classifications and nomenclature.

   d. For floral and faunal specimens, this includes classification by taxon (genus or species) and structural part (e.g., long bone, scapula, scales, nut, etc.).
3) For sites of the appropriate age, radiocarbon samples (when available) should be analyzed, and the resulting dates and standard deviations should be provided.
4) The examination of intra-site artifact patterning, both vertical and horizontal, and the identification of potential activity areas. This should include the mapping of differential artifact densities, artifact types, diagnostic artifacts, and types of lithic raw material.
5) Discussion of feature formation, age, function, and use-life when features are present.

Dating of Site Components

The dating of archaeological components at a site is essential to any evaluation of site eligibility. In most cases the artifact assemblage resulting from Phase I and II testing will contain some temporally or culturally diagnostic artifacts and permit at least **relative dating** of the site. The dating of all sites should be discussed specifically both for the site in its entirety and for individual components and/or features when applicable.

Note: Specific to Pre-Contact Sites

For pre-contact sites, the PA SHPO recommends that relative diagnostic artifact dating, and stratigraphic relationships be confirmed or cross-checked with absolute dating whenever possible. The most common and reliable absolute dating technique is radiocarbon or carbon-14 dating. Carbon samples should be collected from any feature where carbon is present in enough quantity to collect and process for consideration when evaluating the site for National Register eligibility. Carbon-14 dating is of particular utility for sites that lack diagnostic artifacts or when the sample of diagnostic artifacts is small, or the context questionable. Where large carbon samples are not available or where cultigen samples (i.e., corn, beans, seeds, etc.) have been recovered, AMS dating is appropriate and should be undertaken.

Note: Specific to Historic Sites

For historic sites, the site and internal contexts/features should be dated using diagnostic artifacts as well as historic records. If large assemblages of suitable artifacts have been recovered, pipe-stem and **mean ceramic date** formulas or other appropriate analysis should be applied. For individual features, contexts, midden, or fills, diagnostic artifacts or groups of diagnostic artifacts can provide **Terminus Post Quem** and **Terminus Ante Quem** dates. These specific dated contexts should be used to identify date spans for overall site occupation and provide information for a history of site use. Each of the principal contexts or components of a historic site should be dated.

As historic sites are not static entities, the internal layout of the site, placement of features, and site use can and does change over time. Phase II analysis of historic sites should also address site history through a discussion of **feature phasing** and landscape development. This can be accomplished through the dating of individual foundations, features, middens, and fills, as discussed above.

Botanical and Faunal Analysis

The potential of an archaeological site to offer data on environment, subsistence, and diet is largely dependent on the recovery and analysis of a sample of animal and plant species contemporary with and used by its human occupants. Except for stratified sites (discussed below), faunal and botanical remains should be collected from all appropriate feature contexts through screening (1/4" mesh or finer) and flotation sampling. Any standard flotation sample method is acceptable as long as the method is consistently applied to all contexts for that specific site and the methods are described in the Methodology Section of the archaeological report. Specimens recovered from flotation samples should be sorted to the most specific identifiable level and counts of specimens should be undertaken. Such analysis may involve the services of a specialist.

For stratified archaeological sites, in addition to samples from feature contexts, flotation soil samples from soil columns should also be collected. In general, soil columns should be at least 30cm x 30cm in cross section, to provide sufficient volumes of soil for flotation. These samples may be taken in conjunction with soil samples for **pedological** or geomorphological studies.

Note: Specific to Historic Sites

In addition to the analysis described above, for historic sites, faunal analysis should include the identification of butchery, and where possible, meat cuts.

Phase II Site Boundary Definition

Horizontal and vertical boundary definition is necessary for every site that undergoes Phase II evaluation. Boundary definition and site boundary refinement allows for a complete evaluation of site significance, the evaluation of project effects, and provides the parameters for Phase III level mitigation if the site is determined eligible for the National Register. As noted in the Phase I section, preliminary archaeological site boundaries are generally determined based on the vertical/horizontal extent of associated artifacts and features, while taking into account the immediate topography and landform. Phase II boundaries should further define the site area based on all additional research and field investigation. The refined site boundaries developed after Phase II level site evaluation should at a minimum encompass all of the artifacts and features associated with a particular site. The resource must be updated in PA-SHARE to reflect all data collected during Phase II investigations. If Phase II research or field investigation illustrates that more than one site exists within an area identified during the Phase I investigation as one site, updated site information should be submitted on the survey record in PA-SHARE. Additional site numbers will be issued as appropriate.

Note: Specific to Historic Sites

For historic sites, in addition to recovered artifacts and identified features, documentary research and the evaluation of visible natural or cultural landscape features are often necessary to arrive at a site boundary. Documentary sources such as historic and modern aerial photographs, historic maps, and deed information can be useful in this endeavor. For many types of historic sites, especially residential sites and sites in urban areas, site boundaries may coincide with legal property boundaries. For those sites for which modern legal

property boundaries should not be used, site boundaries should reflect the use of the landscape as it pertains to the occupation of the location, not just the spatial extent of artifacts. This means that boundaries should include all related buildings, structures and/or other features (standing or in ruin), including but not limited to residences, barns, outbuildings, wells/cisterns, privies, road alignments, fence lines, and middens.

It is important to note that in many cases boundary definition for historic sites may be arbitrary. This may especially be the case in urban or suburban settings. For urban settings boundary definition should focus on identifying the relevant, associated site area. The site may be a single feature, one legal tax parcel, or a city block depending on the type of site. For suburban or rural historic sites, it is common that land use changes through time have substantially altered, or even erased, the historic site boundaries or features that are generally used for boundary definition. In these instances, boundary definition should focus on what portion of the site area has not been impacted through modern development. For example, if a portion of a historic farmstead is now the site of a modern housing development, this area would no longer be included within the defined archaeological site boundaries. Further, it should be noted that the historic resource boundary, may not be the same as the boundary of the archaeological site.

PHASE III: Mitigation of Adverse Effects

Agreement Documents

All Environmental Review projects that are determined to have an unavoidable adverse effect on cultural resources should codify the mitigation in an agreement document, typically a Memorandum of Agreement (MOA) for Section 106 projects and a Memorandum of Understanding (MOU) for projects conducted under the PA State History Code. The PA SHPO strongly recommends that the development of the agreement document, and development of mitigation alternatives, should be undertaken as soon as all project effects on cultural resources have been identified. For federal projects under Section 106, the development process should be led by the lead federal agency and include at a minimum the participation of the PA SHPO, the project sponsor, federally recognized Tribes and Nations, and any other entity identified as a consulting party by the agency. The Advisory Council on Historic Preservation (ACHP) should be invited to participate in all federal agreements.

Each agreement document should be tailored to meet the specific needs of each project; however, there are sections that should be present in all agreement documents. These common sections include:

1) Whereas statements: statements that lay out the specifics and parameters of the project
2) Identification of historic properties and adverse effects: note which historic properties are located within the project area and which of those properties will be adversely effected
3) Mitigation: detail what will be done to mitigate the identified adverse effects
4) Administrative Conditions: include qualifications, sun-setting, curation, amendments, dispute resolution, unanticipated discovery, etc.
5) Signatories
6) Appendices: such as maps, tables, data recovery plan, etc.

Our office recommends using the ACHP standard MOA document template available on the ACHP website as the basis for drafting mitigation agreements. Additional guidance on drafting Section 106 agreement documents in general can also be found on the ACHP website.

Mitigation Activities

When an archaeological site that is listed in or eligible for listing in the National Register of Historic Places cannot be avoided by project redesign, the impacts to that site should be mitigated. This mitigation may include **data recovery**, an **alternative mitigation** project, or a combination of the two. Data recovery plans or alternative mitigation projects should be developed in consultation with the PA SHPO, any other consulting parties, and the lead federal agency and be detailed as part of the project agreement document.

Data Recovery

The goal of data recovery is to recover and preserve the information which makes the site significant (i.e., eligible for inclusion in the National Register of Historic Places) and then to make that information accessible to

the public. This important information must be recovered prior to disturbance from project activities. Archaeological data recovery generally involves relatively large-scale excavations, detailed laboratory analysis, the production of reports detailing the findings, and public outreach. The resource must be updated in PA-SHARE to reflect all data collected during Phase III investigations.

The details of the data recovery should be outlined in a Data Recovery Plan that is appended to the MOA. Each Data Recovery Plan will be site-specific, but all plans should at a minimum:

1) Identify research questions. These questions should be based on the site context developed in the Phase II evaluation.
2) Identify the level of effort. The excavation should result in an excavation that reaches the point of diminishing returns for the information held within the site.
3) Define a suitable excavation strategy. This should include specifics as to the number, type, and placement of excavation units/tests as well as strategies for feature excavation and the collection/processing of samples for analysis.
4) Detail the type, level, and method of artifact analysis. These analyses should be appropriate to the site type, date, and anticipated artifact collection.
5) Detail the type, level, and method of artifact and feature dating. These techniques should be appropriate to the artifact, feature, or sample anticipated.
6) Define public outreach activities. These activities should attempt to reach various audiences through various media. The PA SHPO always encourages the consideration of new, creative, or innovative activities.

It should be noted that mitigation only applies to the portion of the site that is affected by project activities. If any portion of an eligible or listed archaeological site extends beyond the project area or area of project disturbance, an avoidance plan for the portion of the site that will remain undisturbed should be included in the Data Recovery Plan.

The results of the data recovery excavations and analysis should be presented in a Phase III Data Recovery Report. Information on report formatting can be found in the Reporting section of these Guidelines. The data recovery excavation should adhere as closely as possible to the Data Recovery Plan. Deviation from the plan during excavation should be discussed with the PA SHPO and lead federal agency prior to implementation of the changes. All changes made in the field to the Data Recovery Plan should be detailed and justified within the Phase III report.

Alternative Mitigation

For archaeological sites, alternative mitigation is any mitigation activity that does not include substantial additional excavation of the affected archaeological site, and which is agreed upon by all signatories of the project agreement document. Alternative mitigation may be appropriate and should be discussed and considered in situations where a project will only impact a portion of a site (such as a very narrow road widening

or pipeline) and/or where excavation is not possible due to safety and engineering problems. Alternative mitigation should be developed in consultation with the lead federal or state agency, the PA SHPO, federally recognized Native American Tribes and Nations, any identified consulting parties, and the ACHP, should they choose to participate.

Our office has developed Criteria for Meaningful Mitigation, which is intended to provide a framework for discussing the appropriate mitigation of adverse effects. These criteria consider:

1) The significance of the property
2) The Public benefit of the mitigation project
3) The needs of all parties
4) The enhancement of knowledge and protection of Historic Properties
5) The Project cost and project effect.

While not all criteria must be met for each alternative mitigation project, all criteria should be considered and included to the greatest extent possible. The Criteria for Meaningful Mitigation worksheet is available from our office upon request.

Reporting in PA-SHARE

Reporting Options

The results of archaeological identification (Phase I), documentation of disturbance, site evaluation (Phase II), and mitigation (Phase III) should be presented to our office in a standard format that will aid in timely and efficient review of projects by PA SHPO review archaeologists. Standardization is not intended to inhibit particular analytical approaches or the creativity of individual researchers; rather standard formats represent the minimum level of acceptable documentation for archaeological projects. The standard format discussed below should be modified as needed to accommodate the special needs of a particular project or project phase. The reporting specifications detailed below apply to the attachment produced for the Report section in PA-SHARE.

Phase I Reporting

The results of Phase I survey can be presented in several ways depending on the circumstance, but all reporting must be submitted to PA-SHARE following the procedures outlined in Submitting Surveys, Resources, and Reports for Environmental Review Archaeological Investigations. A full **Phase I Report** can be submitted in any circumstance and should conform at a minimum to the standard report format. Geomorphology should be integrated into the body of the report text and the entire original specialist report provided as an appendix. If the project area is 50 acres or less, and no archaeological sites are identified, a Negative Survey Form can be submitted to PA-SHARE in place of a standard Phase I report. If the project area has been demonstrated to be disturbed in its entirety, a Record of Disturbance Form can be submitted to PA-SHARE in place of a standard Phase I report. Both forms can be found on our website: http://www.phmc.pa.gov/Preservation/About/Pages/Forms-Guidance.aspx.

Phase II and Phase III Reporting

The results of **Phase II Evaluation** and **Phase III Mitigation** should be presented in a standard report format and follow the submission procedures below. Combined Phase I and Phase II reporting in one Phase I/II archaeological report is encouraged by our office for expediency and efficiency if an archaeological site has been identified during the Phase I survey and evaluation of the site for National Register eligibility is necessary. For Phase II and Phase III reports, information from specialists (i.e., geomorphology, remote sensing, floral and/or faunal analysis, etc.) should be integrated into the body of the report text and the entire original specialist reports provided as appendices.

Addendum Reports

For some projects, it is not possible to survey the project area in its entirety and submit the results of the survey in one, complete Phase I report. This circumstance is generally due to landowner access issues within a portion of a project area and/or subsequent project alignment shifts or redesigns. When it is necessary to provide partial Phase I survey results, those areas that have not undergone survey should be clearly noted in the initial Phase I report text and on project mapping. When survey is complete for those areas that did not undergo survey

initially, the results of survey should be provided as a Phase I Survey **Addendum Report**. The report should be marked as an addendum, and, if multiple addendum reports are provided, each should indicate the addendum number. Project mapping for all addendum reports should clearly show which portions of the project area have been previously reported on (cite report) and which portions are reported on in the submitted addendum. Appropriate sections, such as Background or Research and Field Methodology, should reference information in the original report rather than repeating information from the original report.

SHPO Report and Data Submission Procedures

We require submission of all reports and site data electronically through PA-SHARE. The Electronic Report Submission interface replaces use of the Report Summary Form. The review period for any report will begin once a complete report submission is received in PA-SHARE.

We no longer review or curate any hard copy reports. Instructions for report submittal-PA-SHARE can be found here: Submitting Surveys, Resources, and Reports for Environmental Review.

1) A **complete** report submission must contain the following components in order to be accepted for review:

    a. The submittal should provide a PDF version of the report for review. If the file is larger than 70 MB, it will have to be split in order to be uploaded into PA-SHARE. Do not mark initial report submissions as a draft.

    b. If a new site is identified during the survey that meets the site identification criteria, a PASS number must be obtained. To receive a PASS number, the site must be added to the survey record and submitted to the SHPO via PA-SHARE *before* uploading and submitting a final report. Once a PASS number has been assigned, a request for more information will be issued to allow for uploading of the final report. If you collected new information about a previously recorded site, you must provide an update for that site on the survey record in PA-SHARE. For more detailed information about updating or adding a site to a survey record please see the tutorial "Submitting Survey, Resources, and Reports for Environmental Review Archaeological Investigation."

2) Include the PA-SHARE project Number on the cover page of all reports for Electronic Report Submission.

3) All reports and/or forms submitted should include a 7.5-minute USGS map figure showing the outline of the project area and if applicable the LOD. Circles of and/or arrows pointing to a general area are not acceptable. The project area should show the entirety of the area involved in the project. The LOD should represent only the area in which the presence/absence of archaeological resources has been considered, and for which information about that consideration is being presented in the report under review.

4) For all reports, place tables, figures, and photographs on the page(s) following the reference or discussion in the text. All maps need to include scales and north arrows; historic maps that did not originally have a scale need only have a north arrow. A series of figures/maps may be placed in the appendices.

5) Include the PASS number in all appropriate locations within the report if an archaeological site(s), is identified during survey (Appendix C). The PASS numbers for new resources can be obtained through the electronic submission process in PA-SHARE.

Standard Report Format

I. Title Page

a. Title of report including project phase, project name, municipality, and county
b. Author(s) and organization
c. Agency and/or client
d. Report date

II. Abstract

a. Type of project and location
b. Area of Potential Effect (APE) size in acres and hectares
c. Survey or evaluation results
d. Project effects
e. Recommendations

III. Table of Contents

IV. List of Figures, Plates, and/or Tables

V. Introduction

a. Project Purpose
b. Project Administration, organization, sponsors, and agency
c. Description of the proposed project, including project constraints if applicable
d. Definition and description of the Area of Potential Effect (APE)
e. Date(s) of archaeological survey
f. Acknowledgements (if desired)

VI. Project Location and General Description

a. Physiographic description of the project area
b. Present land use patterns (e.g., commercial, agricultural, etc.)
c. Description of current conditions with photographs

VII. Background Research and/or Context

VIII. Research and Field Methodology

a. Sample design and rationale
b. Testing methods and rationale
c. Artifact/sample analytical methods and rationale
d. Discussion of limits of total project area versus area actually investigated

IX. Field Results

a. Results of survey
b. Assessment of the reliability of the data generated as a result of this project
c. Figure(s) that illustrate the location(s) and method(s) of all survey including areas identified as disturbed. Key symbols and/or shading to a legend.
d. Soil profiles labeled with excavation levels and soil horizons.
e. For each site:
    i. Soil descriptions and geomorphological interpretations
    ii. Maps, photographs, and drawings. Provide labels that identify artifact provenience, type, and diagnostic or **cultural affiliation**
    iii. Total artifact count, count by artifact type, stratum, and feature
    iv. Summary/description of cultural features when applicable; include plans and profiles
    v. Site chronology

X. Artifact Description and Analysis

a. Descriptive artifact inventory (provenience and class)
b. Tables summarizing recovered artifacts
c. References for artifact identification sources
d. Photographs of diagnostic artifacts
e. Summary of floral and faunal analysis
f. Discussion of artifacts used for construction of site chronology
g. Discussion of final disposition of collected data

XI. Site Interpretation

a. Placement of each site within its relevant context: How does each site relate to the archaeological record of the area?
b. Discussion of site function, settlement patterns, and artifact distribution
c. Assessment of each site's National Register eligibility (if applicable)
d. Discussion of future research potential for each site

XII. Summary and Recommendations

a. Summary of survey results
b. Assessment of the survey results as compared to the goal and purpose of the survey
c. Discussion of project effects to identified resources
    i. Additional investigation necessary to determine National Register eligibility
    ii. Whether there is an effect to archaeological resources
    iii. Whether the effect is adverse or, whether there is no adverse effect because the portion of the archaeological site located within the project's APE would not contribute to the overall National Register eligibility of the site
    iv. Avoidance (including method of avoidance and mapping)
d. Discussion of final disposition of artifacts and collected data

XIII. Works Cited (American Antiquity bibliographic style)

XIV. Appendices

a. Figures, tables, and photographs that could not be included with their text reference
b. Gift Agreement/Rejection of Gift Form (State Museum Curation Guidelines, 2026)
c. Artifact Inventory, by site and provenience
d. Specialist reports
e. Relevant project communication with PA SHPO
f. Phase II scope of work, if applicable
g. Qualifications of authors or investigators who are not on file at the PA SHPO (abbreviated resumes may be used)

GLOSSARY

Words contained in this glossary are indicated throughout the text with as **bolded blue words.**

Aeolian: Produced or carried by the wind*.

Alluvial (Alluvium): Consisting of sand, gravel, and silt deposited by rivers and streams in a valley bottom.

Alluvial Fan: A fan-shaped landform composed of sediment that forms where a rapidly flowing mountain stream enters a relatively flat valley. As water slows down, it deposits sediment (alluvium) that gradually builds a fan.

Archaeological Site (aka Resource): All evidences of past human activity or occupation which can be used to reconstruct the lifeways of past peoples. These include features, artifacts, environmental and all other relevant information, and the contexts in which they occur. Archaeological sites can be pre-contact Native American, as well as historic period Native American and European. For management of archaeological sites in Pennsylvania, the SHPO office defines archaeological sites based on criteria available in Appendix C of these Guidelines.

Archaeological Integrity: The ability of a site, feature, or context to provide information that could support National Register eligibility under Criterion D.

Area of Potential Effect (vertical and horizontal): the area within which an undertaking has the potential to affect archaeological or above-ground historical resources. For archaeological resources, this is typically the limits of ground disturbance both vertical and horizontal.

Backhoe Sounding (Backhoe Trench): a trench excavated through mechanical means (backhoe or excavator) that will be used by geomorphologists or archaeologists to view the natural and cultural stratigraphy within a project area.

Bioturbation: disturbance, or turbation, of soils and/or sediments by biological means. In the context of archaeological sites bioturbation is generally caused by plant roots, animal burrows, and worm and insect disturbances.

Cairn: A small pile of stones made to mark a place or as a memorial*.

Chevaux-de-frise: A portable obstacle, usually a sawhorse, covered with projecting spikes or barbed wire, for military use in closing a passage, breaking in a defensive wall, etc.***.

Colluvial: Consisting of loose earth material that has accumulated at the base of a hill, through the action of gravity, as piles of talus, avalanche debris, and sheets of detritus moved by soil creep, mass wasting or frost action***.

Cultural Affiliation: The known, projected, or hypothesized cultural, ethnic, or tribal group (e.g., Hopewellian, Mississippian, Puebloan, Eskimo, Apache, historic Anglo, etc.) with which archaeological remains may be identified on the basis of careful scientific study.

Cultural Horizon: A level or stratum of sediment containing archaeological material and/or features.

Diagnostic: Dateable based on an artifact attribute such as form, material, period of manufacture, etc.

Ecofacts: Archaeological data which can be used to reconstruct past environments. This ordinarily includes faunal remains, botanical remains, pollen samples, phyloliths, soils data, and other pertinent environmental information.

Feature: A distinct pattern of artifacts, soil disturbance, or buried architectural remains resulting from past human activity on a site. This includes discrete workshop areas, pits, burials, hearths, post molds, trenches, foundations, and any other residues representing the remains of cultural activities.

Feature Phasing: Creation of a chronology of feature construction and/or use based on diagnostic artifact dates.

Flotation: An analytical method that processes soil samples for collection of micro artifact, faunal, and floral remains. Soil samples are saturated to form a slurry. A sample of material floating at the top of the slurry is collected and the remaining slurry is passed through several sieves of increasing size. The contents of each sieve are examined and any collected artifact, floral, and faunal remains are analyzed.

Frac-out Plan (aka Drill Failure Plan): A plan that provides direction for field staff in the circumstance that a Horizontal Directional Drill (HDD) bore fails while in progress, endangering the integrity of surface soils/sediments.

Fragipan: A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly****.

Geomorphology (Geomorphological): The study of the characteristics, origin, and development of landforms***.

Ground Balance Capability: the ability of the metal detection machine to ignore metallic minerals present in the soil, either automatically or through user calibration.

Hardpan: A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance****.

Lacustrine: Formed at the bottom or along the shore of lakes, as geological strata***.

Magnetometer (Magnetometry): An instrument for detecting the presence of ferrous or magnetic materials***.

Mean Ceramic Date: Date of a site, feature, or context based on the average date of recovered diagnostic ceramics.

Midden: An area of refuse disposal.

Pedology: The study of soils.

Phytoliths: Distinctively shaped silica bodies which may be used to identify the types of plants which were formerly located on archaeological sites. Phytoliths may be analyzed in combination with pollen studies for research on environmental reconstruction.

Relative Dating: The arrangement of artifacts in a typological sequence or seriation***.

Resistivity: Type of survey that measures the resistance of soils and/or sediments to the passage of electrical currents.

Stratified: Consisting of beds or layers of soils/sediments. A "stratified" archaeological site means that layers containing evidence of human occupation are separated from one another vertically, either stacked atop each other or punctuated by sterile sediments.

Terminus Post Quem: The earliest date an artifact, feature, or context could date to.

Terminus Anti Quem: The latest date an artifact, feature, or context could date to.

Trench Box: Metal or wood bracing used to stabilize (shore) open excavation trenches for safety.

References:

* http://dictionary.cambridge.org/dictionary/english

*** http://www.dictionary.com/browse

**** http://nesoil.com/gloss.htm

Appendix A: PA-SHARE Numbering

PA-SHARE Project Numbers are the internal project tracking numbers used by our office. These numbers are assigned to projects at the receipt of the first project submission within a given calendar year. These numbers are unique by project. The number consists of four parts:

1) Calendar year of initial project submission.
2) The letter sequence "PR" to designate that this is a Project.
3) Sequential number assigned within each calendar year. The first project received each January 1 will be assigned 00001, the second 00002, and so on.
4) An ending submission number starting with .001. Each subsequent submission on the project will constitute a new submission and have a new number.

Please note that prior to PA-SHARE, Environmental Review Numbers were assigned based on the federal fiscal calendar (the federal fiscal year begins on October 1 and ends on September 30 of the next calendar year).

Example: The number "2025PR1234.001" represents the 12,345th project that was started in 2025and it has only one submission.

In addition to project numbers, PA-SHARE uses a similar numbering system for Surveys, Resources and Reports. Each data type in PA-SHARE is designated by the middle two-letter sequence:

- "SR" to indicate a survey
- "RE" to indicate a resource (this replaces the previous use of a Key Number. For archaeological sites, the resource will have both a resource number and the PASS number)
- "RP" to indicate a report

Within PA-SHARE, these four data types can be associated with one another to better provide a clear picture of the work and outcomes associated with any project.

Appendix B: PASS Numbers and Site Identification Criteria

The State Historic Preservation Office (SHPO) records all cultural resources in our electronic system PA-SHARE. Each type of resource has different recording needs, so our office has developed a series of procedures as well as some general guidance for recording resources. Please visit https://www.pa.gov/agencies/phmc/pa-share/help-materials section of our website to access this guidance.

Recording Archaeological sites in The Pennsylvania Archaeological Site Survey files (PASS)

PASS numbers are assigned to all archaeological sites meeting the Site Identification Criteria (see below), regardless of whether the site is pre- or post- contact or part of a larger resource. Please use PASS numbers in reporting, not RE numbers.

What Does a PASS Site Number Look Like?

The format of these numbers follows the Smithsonian Trinomial System. This system, which was developed by the Smithsonian Institution in the 1930's and 1940's is now used in some variation by most of the 50 states. The numbers are coded in three parts:

36	AL	0001
Pennsylvania's Unique Identifier	County Code	Sequential Number within County

In Pennsylvania, Smithsonian Trinomial PASS numbers are only issued by the SHPO.

Obtaining Numbers from the SHPO

To obtain PASS numbers for newly recorded sites, please submit a complete site record electronically via PA-SHARE. A site number request is complete only if all relevant data fields are filled in and the recorder has attached the following required documents: site location/boundary map, preliminary artifact catalog (if applicable), and site narrative. Site record submissions will be returned if this information, as well as the complete artifact and material tables, are not complete. Again, for more information and tutorials about electronic data submission and the required documentation, please see the PA SHPO's web site help materials (link above).

How to Record Other Types of Resources

Isolated finds: Isolated diagnostic pre-contact artifacts (for example, a single projectile point) are now treated as archaeological sites and given PASS trinomials.

"Non-site collections": There are instances when some historic materials collected in the field do not meet the site criteria outlined below but they will be curated by the State Museum of PA. In such case, the submitter should contact the Archaeology Curation Section for assignment of non-site collection numbers.

Counties and PASS County Abbreviations

County	PASS County Abbreviation	County	PASS County Abbreviation
Adams	AD	Lackawanna	LW
Allegheny	AL	Lancaster	LA
Armstrong	AR	Lawrence	LR
Beaver	BV	Lebanon	LE
Bedford	BD	Lehigh	LH
Berks	BK	Luzerne	LU
Blair	BL	Lycoming	LY
Bradford	BR	McKean	MC
Bucks	BU	Mercer	ME
Butler	BT	Mifflin	MI
Cambria	CB	Monroe	MR
Cameron	CM	Montgomery	MG
Carbon	CR	Montour	MO
Centre	CE	Northampton	NM
Chester	CH	Northumberland	NB
Clarion	CL	Perry	PE
Clearfield	CD	Philadelphia	PH
Clinton	CN	Pike	PI
Columbia	CO	Potter	PO
Crawford	CW	Schuylkill	SC
Cumberland	CU	Snyder	SN
Dauphin	DA	Somerset	SO
Delaware	DE	Sullivan	SU
Elk	EL	Susquehanna	SQ
Erie	ER	Tioga	TI
Fayette	FA	Union	UN
Forest	FO	Venango	VE
Franklin	FR	Warren	WA
Fulton	FU	Washington	WH
Greene	GR	Wayne	WY
Huntingdon	HU	Westmoreland	WM
Indiana	IN	Wyoming	WO
Jefferson	JE	York	YO
Juniata	JU	Multiple County	

Appendix C: Pennsylvania Archaeological Site Survey Files Site Identification Criteria

The following represent Pennsylvania Archaeological Site Survey (PASS) site identification criteria and standards developed by the Pennsylvania Historical and Museum Commission.

These criteria do not represent the diversity of possible site types but are intended to serve as minimum guidelines for assessing if a collection represents a site. Any assemblage meeting these criteria should be recorded as a site using PA-SHARE. Certain site types are likely to exhibit a lower artifact density than is prescribed in the minimum standards. Examples include, but are not limited to, pre-19th century sites, battlefields, military encampments, and made-land settings. PA SHPO archaeology staff can define sites at their discretion based on contextual circumstances.

According to guidance from the National Register of Historic Places, "A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the values of any existing structure." (NR Bulletin 15: How to Apply the National Register Criteria for Evaluation, 1997:5).

The National Register refers to "prehistoric and historic " archaeological sites, offering a basic temporal and cultural division for site types in North America. The PA SHPO uses "pre-contact" in place of "prehistoric".

Not all materials collected in the field will meet the criteria outlined below. Non-Site Collections are artifact assemblages that do not meet the site criteria but will be curated by the State Museum. In such a case, the Archaeology Curation Section will assign the collection a general county catalog number.

Drawing Boundaries

Site numbers are meant to designate locations of past human activity, not necessarily patterns of survey or collection. During Phase I, site boundary definition should heavily consider landform and topography. Larger site areas, including multiple artifact concentrations more than 50 feet apart, should be grouped appropriately within the same landform. Should additional investigation at the Phase II level show that multiple sites exist, the site can be split, and a second site trinomial can be assigned.

For projects limited to a narrow transect through a portion of a site (e.g., pipeline or sewer line rights-of-way or highway sliver-takes) the extent of the site within the right-of-way should be defined. The likely extent of the site beyond the right-of-way should be estimated based on topographic or other features, such as landforms and waterways. For historic sites, associated standing structures and other historic features should be included within the site boundary.

For sites in urban or industrial settings, the site boundary can either be defined by artifact concentrations, features or through the parcel boundary, if that is appropriate to the site's sensitivity based on historic research, integrity and the extent of the property.

Pre-Contact Sites

Minimum Standards

1. Two or more culturally modified objects (points, flakes, stone tools, pottery sherds, etc.), excluding fire-cracked rock (FCR), represent a site:

    a. When found within a 50 ft (15 m) diameter area when surface collecting a plowed field, or
    b. When recovered from an individual or adjacent shovel tests/units spaced no more than 50 ft (15 m) apart.

2. The presence of any subsurface culturally derived feature requires designation of the locality as a site.

3. A rock shelter containing at least one pre-contact artifact (excluding FCR) is a site.

4. The presence of a culturally derived feature on the surface that can be identified and supported by peer-reviewed background research or knowledge from a federally recognized Tribe or Nation. If the age of the feature is unknown, the site will be recorded as Pre-Contact and Historic site.

Reminder: Isolated **diagnostic** pre-contact artifacts (a projectile point or ceramic sherd), are assigned official PASS site numbers in PA-SHARE.

Historic Sites

For the Pennsylvania Archaeological Site Survey (PASS), record **all** of the following as historic archaeological sites if they are 50 or more years of age. In keeping with this standard, diagnostic artifacts used to assess a find's status as an archaeological site should be 50 years old or older. Diagnostic is defined as securely datable based on period of manufacture, decoration, and/or function.

For historic sites, in addition to recovered artifacts and identified features, documentary research and the evaluation of visible natural or cultural landscape features are often necessary to arrive at a site boundary. **Documentary sources such as historic and modern aerial photographs, historic maps, and deed information must be used in this endeavor**. For many types of historic sites, especially residential sites and sites in urban areas, site boundaries may coincide with legal property boundaries.

Minimum Standards

1. Any building foundation, ruin, or structural feature—whether discovered above or below the surface—should be recorded as a site.

    - Standing structures should be recorded as above ground resources in PA-SHARE. If the property's archaeological potential has not been investigated, then it is not necessary to also complete a PASS form.

- Railroads and canals/tow paths should be recorded as above ground resources. If artifacts or other features are discovered in association with these resources and they meet the criteria in 3, below, then they should be recorded as associated archaeological sites. In certain circumstances, a district could be recorded to include both the above ground and archaeological resources.
- Roadbeds without artifact assemblages do not need to be recorded as archaeological sites in PASS. They can still be documented as features within an archaeological site or district. Should you have reason to record a roadbed as an archaeological site and assess its individual significance, please contact the PASS coordinator.

2. Any historic structure, foundation, ruin, or structural feature AND any number of associated historic artifacts found within 100 ft (30 m) of the feature constitute a site. If the artifact scatter extends beyond 100 ft, the site's boundary should be extended to reflect the occupation or activity represented by the site.

    - In urban settings or situations where there is historic parcel data, the site's boundaries should be defined by historic land parcels.

3. Artifact concentrations should be recorded as sites in the following circumstances. Generally speaking, the recovered assemblage must contain artifacts from at least two functional classes and include three securely diagnostic artifacts to constitute a site. If all artifacts come from the same functional class (as in a bottle dump) there must be five securely diagnostic artifacts to define a site.

    - Currently unplowed contexts (including urban sites):
        - A minimum of 30 artifacts recovered from adjacent or non-adjacent shovel tests/units within a half-acre or smaller area constitute a site.
    - Currently plowed contexts:
        - If your resource shows on a historic map, a minimum of 30 artifacts recovered from a one-acre or smaller area is a site.
        - In the absence of map evidence, site definition requires the presence of 50 artifacts within a one-acre or smaller area.

Appendix D: Policy on Human Remains

PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
PENNSYLVANIA STATE HISTORIC PRESERVATION OFFICE (SHPO)

Policy on the Treatment of Human Remains
Adopted March 10, 1993

The SHPO developed this policy to serve as a guide for persons conducting agency programs for SHPO, persons excavating for any reason on Commonwealth land, and persons excavating under a permit authorized by a state agency, other than SHPO, who discover human remains or a burial site. It serves to prevent the destruction of unmarked burials, encourage respectful treatment of all human remains, and the role of Native American groups, in compliance with NAGPRA. The policy further attempts to balance the scientific and research value of skeletal material and associated funeral objects.

This policy offers more guidance in two specific areas:

1) Deals with burial sites discovered during CRM projects, archaeological field investigations, grant funded projects, and all earth moving projects on state land. The discovery of human remains should trigger a process that encourages careful and dignified treatment and mandates the notification of appropriate parties. The issue of human remains and burial sites is not directly addressed in NAGPRA, however, the PA policy hopes to follow this legislation as closely as possible.
2) The treatment of existing collections of skeletal material, associated and unassociated funerary objects, sacred objects and objects of cultural patrimony.

Definitions
For the purposes of this policy, the following definitions should apply:

Burial site: any natural or prepared physical location below, on, or above the surface of the earth into which, as part of a death rite or ceremony of a culture, human remains have been deposited whether marked or unmarked.

Policy I – Discovery of Human Remains
This policy is activated when the discovery of human remains falls within one of three categories:

1) When human remains are uncovered, disturbed, or exposed in the course of archaeological field investigations undertaken during Commonwealth funded, permitted, or assisted projects.
2) When human remains are inadvertently discovered during earth moving activity on Commonwealth lands.
3) When human remains are discovered during state permitted activities occurring off Commonwealth land, when the permit is granted by any agency of the state government, except the SHPO.

This policy outlines the procedures to be followed if the discovery of human remains fall within category 1 or 2. It is further designed to give guidance to discoveries that fall within category 3. It will be implemented in part through SHPO archaeological guidelines, through its Grants Program, through its contract documents, and through archaeological permits granted for archaeological investigations on state lands.

1. In field situations, human remains may be encountered under two sets of circumstances – (1) during a planned archaeological investigation, or (2) during routine ground disturbance from excavations and construction, known as unexpected discovery.

Archaeological Investigations (Category 1)
Any person doing archaeological excavations through permits or grants through the SHPO must have a contingency plan for the treatment of human remains or a burial site as part of their research proposal. This plan should identify expected lineal descendants or culturally affiliated groups

- When human remains are encountered in the manner they were anticipated, the treatment plan should be activated.
- If, during the course of investigation, it appears that human remains are encountered that were unanticipated, then work at the site should stop. The coroner and the SHPO should be notified of the find.

Unexpected Discoveries (Category 2 required action, Category 3 guidance)
Any person while undertaking earth moving activities occurring off Commonwealth land who becomes aware that human remains or a burial site are being disturbed shall cease all activity in the area of the site. If it appears that the remains may be of a historic or prehistoric nature, the SHPO should be notified of the find.

2. Whether human remains are encountered through archaeological investigation or through inadvertent discovery, it is the intention of this policy to allow an opportunity for consultation with groups that may be culturally affiliated with or may be lineal descendants of the deceased. This will give all parties involved an opportunity to develop a plan for the remains.

Archaeological Investigation (Category 1)
The treatment plan developed as part of the scope of work should be implemented.

Unexpected Discovery (Category 2 and 3)
The Commission has one week to notify potential lineal descendants or culturally affiliated groups.

3. Based on the above notification and following consultation, the SHPO will consider the concerns and recommendations of all parties who are able to establish lineal descent or cultural affiliation with the individual(s) associated with the burial site.

4. Once consultation is completed, the SHPO will develop and direct a final treatment plan. This should be completed within fifteen days. The plan may recommend any of a number of treatment plans. These include:

- Leaving the human remains *in situ* if the burial will not be disturbed and can be protected in this manner.
- Removal and immediate reburial by the appropriate culturally affiliated group or direct lineal descendant
- Removal of the human remains and examination undertaken by a qualified osteologist to gather basic information
- Removal and examination of the remains

5. Funerary objects and grave goods directly associated with unmarked human remains should be treated in the same manner as human remains.