Prior to starting the laboratory work necessary to complete an archaeological project, it is essential to know about the nature of the project; its goals, the research design, field methods used, personnel who worked on the project, and other information. If the person who conducted the fieldwork is also conducting the laboratory work, then this information is already known. If you are doing the laboratory work for a project conducted by someone else, it is necessary to fully understand the project before you begin. If possible, talk to the project and/or field director; familiarize yourself with any documentation available, such as the field notes, maps, and written proposals.

## Research Design

What was the research design for the project; what questions did the project seek to answer? What were its goals? Different research designs will result in different materials coming into the laboratory for analysis, and such materials may even be organized in different ways. If the goal of a particular project was to obtain a sample of grinding stones, for example, other tools may have been present but not collected. The laboratory worker would receive only grinding stones to analyze and thus would have a biased sample of the assemblage from the site.

It may be that many soil samples were taken from a site. The type of processing and analysis of these soils would depend on the kinds of information desired from each of the samples. The analytical goals would determine the type of processing used; there may be different goals for different samples.

## Inventory (Survey)

Inventory (often called survey) is the process of looking for, and providing a preliminary assessment of, archaeological sites. In the process of conducting inventories, sites will be located and some artifacts may be judgmentally collected from the surface.
Such artifacts may not represent the full range of artifacts present at a site, resulting in a biased artifact sample.

**Excavation**

*Excavation* involves digging into a site and collecting the materials from beneath the surface of the site. Excavations are conducted at sites for two basic reasons: (1) *small-scale excavations*, often called *test excavations*, are conducted to determine the presence, nature, extent, content, age, structure, and research potential of a site; and (2) *large-scale excavations*, sometimes called data recovery or mitigation, are designed to recover information useful to answer specific questions generated in the research design.

Excavations usually are conducted in discrete areas called units or pits. A unit is the hole made by the excavation and forms part of the provenience (coupled with “levels”; see the following paragraph) of the materials within it. The size and shape of excavation units vary depending on the research design and field methods.

An excavation unit, called Unit X, Test Unit X, Trench X, or some other appropriate label, is usually dug in *levels*. Levels are specific layers of soil removed during excavation and processed for cultural materials. Levels might be arbitrary (e.g., 10 cm at a time) or might follow distinct soil layers (stratigraphic levels). When possible, stratigraphic levels are used since they may better relate to the way the soil was deposited in prehistory and may prevent mixing the deposits from different times. Arbitrary levels are used if no obvious stratigraphy is visible. In addition, the use of arbitrary levels insures a consistent volume of soil from level to level, making comparisons of recovered materials easier.

Materials removed from an excavation unit usually are processed through steel mesh screen so that the soil falls through and the cultural items larger than the mesh size stay in the screen to be picked out and saved by the screener. Thus, the provenience of an artifact might be the “30- to 40-cm level of Unit 10.” Sometimes the soil from the unit is processed through the screen dry and sometimes water is used. This latter technique is called “wet” or “water” screening and, in effect, cleans the materials in the screen, making artifacts and ecofacts much more visible. The recovery of cultural materials should improve when wet screening is used.

Sometimes artifacts are found in the excavation unit during the digging before it is screened. In such cases, the items are called *in situ* (this is a Latin phrase meaning “found in place” and is always italicized or underlined). An *in situ* item has a precise provenience—the exact measurements of its location in the unit (rather than only a level-specific location). *In situ* items should be recorded and bagged separately from the screened constituents.

Other samples are often taken in the field, including soil samples for chemical, geological, pollen, phytolith, radiocarbon, protein, and other analyses. Each is processed and examined in special ways.

**Small-Scale (Test) Excavations**

The purpose of testing an archaeological site is to determine the general contents of a site, its size, and its structure (sometimes testing is needed just to determine whether an area is a site or not). Test excavations may be quite limited; a single unit in a site may be sufficient to determine whether midden is present, and if so, how deep it is. Testing may be accomplished by any of a variety of means, or a combination of methods. Excavation units may be hand dug, backhoe trenching might be used, small shovel test pits (STPs) might be excavated, or an auger might be employed. While small excavations
can be useful, one must remember that the smaller the excavation unit (such as an STP), the less likely it is that the archaeologist will encounter materials in the soil and be able to learn something about the site. STPs and augers must be used judiciously.

**Large-Scale Excavations**

Large-scale excavations employ many of the same methods as testing; however, where only one or two units may be used to test a site, 30 or more might be used on a major excavation. The purpose of a large-scale excavation is to recover important information as defined in the research design. Many sites where large-scale excavations are undertaken have been previously test-excavated. People working in the laboratory on a large-scale excavation project should read the testing report to familiarize themselves with the site.

**Field Methods**

It is important for the laboratory worker to understand how the material to be analyzed was obtained. If screening was not used in the excavation, it may be that only larger materials would have been found and collected. If 1/4-in. mesh screen were used, many materials would have been missed, biasing the sample. For example, the bones of many small animals would pass through 1/4-in. screen, meaning that larger animals would dominate the recovered faunal assemblage and someone analyzing that collection would assume that only large animals were obtained and eaten. The use of a smaller screen size (e.g., 1/8-in.) would result in the recovery of many more bones, including those of smaller species. Thus, the use of larger mesh screens would likely create an erroneous interpretation of the diet of the occupants of that particular site. The same would hold true for small artifacts, such as beads, flakes, projectile points, and fragments of other items as well. Additionally, if the soil were wet screened, visibility would have been better and the recovery greater.

**What Comes in from the Field**

Materials from the field will be in marked bags (paper and/or plastic) and will be temporarily stored in larger containers such as boxes or buckets. These bags should be secured in the field so that they do not tear, fall over and spill, or get lost before they get to the laboratory. Trying to determine which bag a loose flake came from is virtually impossible.

**Field Provenience: Sites, Units, Levels, and In Situ**

Almost all materials processed in a laboratory will be from sites; few will be isolates. Materials get collected in a variety of ways—from the general surface, from specific surface collection units, and from excavation units. Each of these is a different analytical entity and must be considered separately. Much of the material is grouped by a general provenience, say the 20- to 30-cm level of Test Unit 2. In this case, the precise location of individual items is not recorded, just the general location (level) of the material within Test Unit 2. This material is considered separately from any other level of any other unit. All in situ items should be in their own bags and should be cataloged separately.

**Bags**

Each collection unit (surface, excavation, level, stratum) will have its own field bag or bags containing the materials recovered and saved from that unit. Within each bag
may be other, smaller containers (bags and/or vials) that hold the various items from the unit and level. These smaller containers may include materials that were sorted in the field according to artifact class, \textit{in situ} items, or other samples. The provenience for the contents of the bag is listed on the outside (see Figure 2.1). \textbf{DO NOT MIX UP THE MATERIALS FROM DIFFERENT BAGS!} While it may seem that there is considerable repetitive information on the bags and notes, it is much better to be redundant than to lose contextual information. If more than one bag from a level is present, the bags should be labeled “1 of 2,” “1 of 3,” and so forth. Make sure you find all of the bags before you proceed with any laboratory analysis.

\section*{Notes and Records}

Included in the documentation will be both general field notes, level notes (Figure 2.2), maps of the site (showing the location of units and features), and maps of each of the collection units (Figure 2.3). Level notes and maps should contain information

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{field_bag_labels.png}
\caption{Examples of field bag labels: (top) regular bag; (bottom) \textit{in situ} bag.}
\end{figure}
FIGURE 2.2
Example of a level record sheet (level notes).

ARCHAEOLOGICAL FIELD NOTES
Unit Level Record

Site: CA-Ken-XX    Unit: Tu-2    Level: 30-40 cm
Excavator: Sutton, Arvel
Screen Size: 1/8
Unit Orientation: N/S    Excavation Method: travel

DESCRIPTION OF MIDDEN
Soil Type: Sandy loam
Color: Med Brown    Consistency: Soft
Ease of Excavation: Easy    Disturbances: Some sediments
Features: None

MATERIALS RECOVERED
Substrate (quantities and material): = 100 chalcedony flakes, a few rhyolite flakes
Faunal Remains (quantities, general 10): Some large mammal (burned) and lots of small mammal, no fish or shell
Formed Artifacts (list and draw; use reverse side of form if necessary)
- One mano in situ (item X on map)
- Sandstone 1 small chalcedony core
- Some charcoal and burned rocks in unit, we may be near a hearth or some other feature.

Recorder: Sutton    Date: 6-22-01
FIGURE 2.3
Example of a level record map (part of the level notes).
on the locations of features, *in situ* items, disturbances, errors in excavation, and a brief review of what was found in each level or unit. Information on the content of a unit can be very useful if a mistake was made in the field; perhaps it can be corrected by comparing the materials in the bag to the notes. Having the field records is indispensable in the cataloging process.

**Field Bias**

The only materials coming to the laboratory are those that were saved in the field; many items from the units are not saved and so are never seen by the laboratory people. We assume that the field people made correct decisions about what to keep and what not to keep, but the truth is that artifacts and ecofacts are invariably discarded accidentally in the field, resulting in a biased sample. Field workers are taught to keep any questionable material; it can always be discarded later. In some cases, the field crew may have purposefully saved nonartifactual materials for cataloging and analysis (such as stones from a hearth feature). If apparent noncultural material is in the field bags, it is important that the laboratory worker look through the field notes and/or ask if it should be saved; perhaps someone had a reason to save it.

Field bias may also be planned as a part of the research design. If only certain kinds of data were being sought, other data may have been intentionally discarded. This is one reason why it is important to understand the research design and field methods prior to any analysis of the collection.

**Borrowing Collections from Other Institutions**

Collections from other institutions will vary in condition: supporting documentation may or may not be available; the artifacts might not be cataloged; artifacts might be mixed up with other material. It is important to obtain all the available records of any collection. Make sure there is an inventory of what was borrowed so that an accounting can be maintained.

Store the borrowed collection in a secure place. When you are finished with the material, it must be returned to the lender/owner/curator. It is essential that the material returned matches the material borrowed and that you obtain a receipt for its return.

Some collections lack records and/or provenience. There may be no field notes or maps, and in some cases, the location of the site itself may be lacking. If you decide to continue your analysis regardless of the condition of the collection, do the best you can with the available information. Keep in mind, however, that it is possible that the lack of records and/or provenience is such that working with the collection is not worth the effort.

**Reporting the Results**

It is the ethical and scientific obligation of all researchers to report their data and interpretations. Failure to do this is a very serious ethical offense. A report on an archaeological excavation/collection should include all of the necessary details of the project (see Appendix 1 for an example of a report format).
The results of your various analyses should be presented in an organized fashion so that the knowledge that you have acquired can be communicated to others, both scientists and laypersons. This means that:

1. all terms used should be defined;
2. the writing is clear and concise; and
3. figures should enhance or replace written descriptions.

All repetitive information, such as catalog numbers, provenience, and metric measurements should be presented in tabular form, especially when the collection is large. As a general rule, do not repeat information in the text that is available in the tables.

Include descriptions of the methods you have used for the various analyses. There are no perfect ways to analyze or look at collections, but always explain what was done, why it was done, and what conclusions were reached. All interpretations should be presented as such, and not as factual data. All references that are cited in the text must be listed in a reference section at the end of the text.

Tables

Tables present data in lists that are easy for the reader to follow. Anytime you have more than three items in the same category (such as three projectile points), their provenience and attributes (measurements, weight, style, completeness, etc.) should be presented in a table. Three items or less can be described in the text. Examples of both ways of reporting are included in Appendix 1.

Figures

Figures enhance a report, present nonmetric data (e.g., shape of an artifact), and make the report more meaningful to the reader. At the very least, two maps as well as drawings of significant artifacts should be included in any report.

Maps

At least two maps (see Chapter 14) are necessary. First, a map of the location of the site in your region is needed. A general location is adequate and advisable so that vandals cannot use the map to locate the site (a qualified archaeologist can obtain the specific location if necessary). Second, a map of the site itself is needed, showing the location of features, units, the datum, and natural features (e.g., streams and cliffs). You may also need maps of individual features. Always include a north arrow and bar scale so that the image can be enlarged and/or reduced without losing the information on size. Alternatively, the size can be stated in the figure caption, but the former presentation is preferred. Consult the United States Geological Survey convention for map symbols.

Artifact Illustrations

Artifact figures may be drawn using pen and ink or by using computer graphics programs (see Chapter 14), or photographs may be used. When drawing an artifact, it is usually presented in both a plan view (view from above) and in a cross sectional view (view of the shape if the artifact were split longitudinally). In this way, both the overall shape and size of the artifact can be seen, as well as any nonmetric details. Other views
may be used for specific purposes. With drawings and photographs, a metric bar scale should be included. Use figure captions that tell the reader what you are illustrating and why. Not all artifacts need to be illustrated, but representative examples of major types should be included. This subject is considered in greater detail in Chapter 14.

Photographs

Photographs can be very useful (see Chapter 14). In the past, it was difficult to use photos, especially color photos, due to the cost of printing. Now, however, printing costs are down and digital images are fairly simple to reproduce and include in publications. Use photos to show the important attributes of a site (e.g., natural setting), features (e.g., hearths), and artifacts (which can be digitally scanned).