# ASSESSING PRESERVATION NEEDS

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## A SELF-SURVEY GUIDE

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# PREFACE

NEDCC is pleased to present this guide to the preservation community. NEDCC has long recognized that surveying preservation needs is a vital first step in preservation planning. In 1991, NEDCC produced a technical leaflet entitled "What An Institution Can Do To Survey Its Own Preservation Needs," based on an earlier document written by NEDCC's founder, George Cunha. These documents have been revised and expanded in this guide, providing updated preservation information and a more user-friendly structure for surveyors. NEDCC hopes that the guide will help small to medium-sized institutions identify their preservation needs and develop systematic preservation programs for their historical collections.

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Ann Russell
Executive Director, NEDCC

## INTRODUCTION

When the original version of this guide was published in 1991, the field of library and archives preservation had, over the previous ten to fifteen years, gradually moved from an emphasis on conservation treatment of individual items to an understanding that preventive preservation actions for large numbers of items offer the best protection for library and archival collections—and that systematic long-range planning maximizes the use of limited funds for preservation. In the intervening years, these concepts have been further developed; ongoing research has led to some changes in recommended preservation practice; the preservation community has developed new standards; and there has been increasing emphasis on preservation issues related to the rapid expansion of electronic and digital media. This edition makes every effort to provide updated preservation information in a more useful structure for surveyors.

The basic purpose of the guide, however, remains essentially the same as in 1991. It is meant to help small to medium-sized institutions with limited preservation experience (libraries, historical societies, archives, and museums) design a program to ensure that their historical collections survive as long as possible in usable condition. It is not targeted toward larger institutions such as research libraries, nor is it targeted toward the preservation of general circulating collections. Hence, it does not address preservation issues specific to those situations, such as book repair for circulating collections, library binding of circulating materials, management of a preservation department within a large library, or other complexities (such as multiple buildings) of larger institutions. Although some of the material here (building issues, disaster planning) could be used in a larger institution, the guide is primarily designed to serve small to medium-sized institutions.

Paper is found in many forms in historical collections, including manuscripts, bound volumes, scrapbooks, ephemera, photographs, newspapers, wallpaper, fans, and artworks. Many historical collections also contain parchment and vellum, film, sound and video recordings, computer media, and other cultural artifacts that are not paper-based. This guide is designed to provide a basic overview of preservation issues for all these types of collections, but it does not address in detail the preservation of non-paper formats. Repositories that have large amounts of this type of material are strongly encouraged to consult with an appropriate specialist. In addition, the enormously complicated issue of using digital imaging to preserve historical collections can be addressed here only on a very basic level. This guide's primary emphasis remains on traditional paper-based collections, since these are the most commonly encountered in small repositories—and on traditional preservation strategies, since these remain the most effective means of preserving the largest number of materials for the longest time.

The guide provides a template for assessing preservation needs, as well as guidance for setting preservation priorities once the needs have been identified (since even the largest and most prosperous of repositories does not have enough resources to address every preservation need for every item in its collection). The guide also points the way to additional sources of preservation information. Sources can be found in the *Resources* section. These are not exhaustive, but rather they are a starting point for further exploration.

# I. SURVEYS: Why and How?

## *A. Why is a Survey Important?*

Paper-based historical collections are vulnerable to deterioration for many reasons. Paper collections are subject to what is often called "inherent vice," a term that describes inherent weaknesses in the chemical or physical structure of an object. There are also a number of external contributors to the deterioration of paper collections, including extremes of temperature and relative humidity, careless handling of collections, theft and vandalism, fire, water, pests, pollutants, and light (both ultraviolet and visible). The example of wood pulp paper illustrates the way inherent vice and external agents combine to cause deterioration. Wood pulp contains impurities such as lignin, and other chemicals are deposited in the paper during the papermaking process. These combine with moisture in the air over time to form acids and increase paper deterioration. Although little can be done to combat inherent vice, certainly external risks can be reduced or prevented, the rate of deterioration can be slowed, and sometimes damage can be avoided altogether. This is known as *preventive preservation.*

The most effective preservation efforts focus on ways to prevent or slow down ongoing deterioration (such as light damage or acidic deterioration) in large numbers of books and paper. A systematic preservation program for historical collections generally incorporates the following elements:

- **Environmental Control**—providing a moderate, stable temperature and humidity, and controlling exposure to light and pollutants.
- **Disaster Preparedness**—preventing and responding to damage from water, fire, or other emergencies.
- **Security**—protecting collections from theft and/or vandalism.
- **Storage and Handling**—using non-damaging storage enclosures; using proper storage furniture; cleaning storage areas; using care when handling, exhibiting, or reproducing collections.
- **Reformatting**—reproducing (e.g., microfilming, photocopying, or digital imaging) onto stable media collections that are fragile, damaged, valuable, and/or much-used.
- **Binding and Repair**—using library binding for appropriate materials (e.g., those that are not valuable as artifacts), performing minor in-house repairs (e.g., encapsulation, surface cleaning, minor paper repair).
- **Conservation Treatment**—having valuable items such as manuscripts, journals, maps, and drawings treated by a qualified conservator. Since treatment is the most time-consuming and expensive strategy on a per-object basis, most libraries choose to treat only unique or otherwise valuable artifacts.

It is clear that if historical collections are to survive in the best condition possible for the longest time possible, a systematic preservation program is necessary. It is also important to have an ongoing plan for carrying out preservation activities. A plan ensures that scarce resources are used as effectively as possible, and that important preservation activities are not neglected. The first step in preparing a preservation plan is to assess the institution's existing preservation needs—what preservation actions are needed, which of them are already underway, and which are not? Answering these questions is the purpose of a general preservation planning survey.

## B. What is a Survey?

Conservators and preservation professionals routinely undertake several different types of surveys, and the terminology used to describe them can be confusing. A *general preservation planning survey* identifies overall preservation goals and priorities for a repository. It differs from a *collection condition survey* in that it does not normally provide an evaluation of the specific condition of particular items (with the possible exception of identifying items of value that are in need of "emergency" conservation treatment). A collection condition survey might be required for a specific subset of the institution's collections once a preservation planning survey has been completed. A collection condition survey can take the form of an *item-by-item survey* by a conservator with detailed knowledge of a particular type of collection (books, photographs), or it can take the form of a *statistical survey* that looks at a sampling of material (generally books, from a circulating or research collection) and provides concrete data about the condition of that particular subset of the institution's collections.

This guide is solely concerned with the general preservation planning survey. A thorough general preservation planning survey examines building conditions, policies, collections, and storage and handling procedures. At the end of the survey, a surveyor should be able to:

1. Identify potential hazards to the collection;

2. Prioritize areas of the collections for preservation action, distinguishing between artifacts and informational or limited-lifespan materials;

3. Identify preservation actions required to keep collections in the best condition possible for the longest time possible (examples include extending security, improving housekeeping, installing climate-control equipment, replacing poor enclosures, conservation treatment);

4. Prioritize the needs of the collections and identify steps necessary to achieve the required preservation actions.

However, a preservation planning survey is not a preservation plan. Whether a survey is done in-house or by an outside consultant, it is important to summarize the findings in a written report. This will normally set forth time frames for short-term and long-term preservation priorities. The repository will then use these priorities, together with other relevant issues such as available institutional resources and political considerations, to create a preservation plan that sets forth a specific schedule for accomplishing particular projects.

In making decisions about what preservation action(s) to address first, among the most important questions are these: (1) what will have the greatest impact on the largest number of objects; (2) what is really possible in the institution; and (3) what action will have the greatest visibility (and the greatest effect on future funding or public interest)?

## C. Who Should Conduct the Survey?

An outside consultant (who usually makes a one-day site visit and writes a summary report of his or her findings) or one or more in-house staff can conduct a survey. If the institution chooses to engage an outside consultant, several regional conservation and preservation centers, as well as many individual conservators, can provide this service. Various regional and national grant programs provide funding for such projects (See the *Resources* section at the end of the guide for more information).

Keep in mind the goals for the survey when deciding whether to engage an outside consultant. A consultant can provide an objective viewpoint and is often seen by the administration as having special credibility, thus making it more likely that the recommendations of the report will be acted upon. In addition, grant programs often require a general preservation planning survey before an institution can apply for grants for activities such as reformatting, rehousing, or conservation treatment. If the institution is looking to apply for grants, an "outside" survey can be performed more quickly than an in-house survey, and the resulting recommendations may carry more weight with granting agencies.

However, staff members bring important knowledge of the institution's values, conditions, and functions to the survey process. As long as the surveyor can suspend assumptions about an institution's capabilities and can look open-mindedly at issues that may have been ignored for years, an in-house survey can be very effective. Such a survey will usually be conducted part-time, so it may take longer. But it can pay great attention to detail and involve the whole staff actively.

If a survey is undertaken in-house, it is important to divide the project into manageable pieces. If the repository is very small, one staff member may have to undertake the entire survey. Putting together a brief written report after each section is completed may be helpful. If there are several staff members, it may be most helpful to put together a committee and assign each member a section of the survey. Each member would then report findings back to the committee, and the committee would draft a final summary report with suggestions for preservation priorities.

## *D. How to Use this Survey Guide*

This guide provides guidance and forms for conducting an in-house preservation survey. However, consultant surveyors also will find it useful.

The three main sections—*Getting Started*, *Surveying the Building*, and *Surveying the Collections*—each contain a number of sub-sections that break the survey down into manageable pieces. In each subsection the guide provides:

- Summaries of guidelines and standards that establish a context for the worksheet questions.
- Sidebars that suggest typical preservation actions to be taken with existing resources.
- References that expand on the summaries. Often cited is NEDCC's publication *Preservation of Library and Archival Materials: A Manual*, edited by Sherelyn Ogden (Andover, MA: NEDCC, 1999). For convenience, it is cited as *PLAM3* throughout.
- Worksheets.

Prior to conducting the survey, the surveyor should review the background information provided in the guide and determine which worksheets will be needed for the survey. These should be photocopied, with additional blank sheets of paper for taking notes when necessary. Carrying a clipboard with the worksheets, blank paper, and a pencil (no pens when working with historical collections!) is a good method for collecting information as the surveyor moves through the building.

Multiple copies may be needed of some of the worksheets—such as those for individual exhibition/storage areas, or for evaluating a specific collection (e.g., a collection with mixed media such as a family collection containing bound volumes, manuscripts, and photographs). Individual worksheets are also provided for specific collection formats (e.g., a book collection, a group of scrapbooks, a

collection of videotapes). The surveyor should choose among the various worksheets according to the types of collections held by the repository and/or the amount of detail desired in the survey.

It will be helpful to create a tabbed notebook for the completed worksheets and supporting information (such as a mission statement or collecting policy, draft disaster plan, library binding contract). This will keep all the information in one place so that a summary report can be easily put together.

Although the information and questions in this guide are not exhaustive, they provide a review of the most significant factors affecting the condition of collections with enduring value. A thorough examination of these concerns will usually lead to other useful observations. Much of the survey process is common sense!

# II. GETTING STARTED

## *A. Overview*

### 1. The Institution and Collections

As a first step in surveying, gather general information (such as the institution's history and major activities) to provide a context for collections preservation activities. Other general issues that may impact preservation of the collections include: overall staffing and budget, long-range strategic planning, future plans for the building (such as renovation or expansion), and the institution's relationship with other local institutions that collect historical materials. This list is, of course, not comprehensive. The surveyor may well discover additional issues particular to the institution.

In addition, to ensure that all relevant materials are examined, list the number and types of historical collections held by the repository. Exact counts are not necessary if there are large amounts of material, but estimates should be as accurate as possible. Some indication of the relative importance of the various materials held by the institution is also helpful, as is a description of usage of the collection.

### 2. Mission and Collecting Policy

A clear institutional mission and a carefully thought out collecting policy are necessary if preservation activities are to be effective. Preservation planning requires a manager to set priorities by looking at the resources available for preservation and weighing the condition, needs, and value of materials against them. This process is sometimes called "selection for preservation." To do this, a repository must have a detailed understanding of its goals and objectives for the collection—exactly what it wishes to document, who it wishes to serve, and what types of material it will collect to accomplish those goals. It is also crucial for a repository to have a clear sense of what it will not collect. Collections must be limited to those that serve the real needs and mission of the repository.

The mission statement should enunciate the institution's overall goals (whether for its entire collection or for a part of it, such as a local history collection), while the collecting policy provides specifics about the scope of the collection and indicates areas in which additional materials may be collected in future. A good collecting policy will take into consideration the holdings and collecting activities of other local (and national, if appropriate) repositories.

**TIPS FOR TAKING ACTION**

- Write out a draft mission statement for the historical collection
- Make a list of materials that need to be evaluated for possible deaccessioning
- Contact other local repositories to determine whether they hold related collections

For more information on preparing a mission statement and collecting policy, see "Collections Policies and Preservation," in *PLAM3*.

### 3. Intellectual Control

Effective selection of collections for preservation requires good intellectual control, since relative values and priorities cannot be assigned unless staff is familiar with the content of collections. An

inventory of collections using standard library and archival descriptive practices can also assist systematic comparison of an institution's holdings with those of other repositories, especially when cataloging has been automated using the standard MARC format.

Most institutions with library collections are familiar with cataloging standards for library materials, but many such institutions are less familiar with standards for the arrangement and description of the archival materials (e.g., non-printed items, such as photographs, documents, handwritten ledger books, scrapbooks) that are often found in historical collections. Archival materials are generally best organized in groups, since the individual items are often related. Instead of cataloging each individual item, related materials are cataloged together as one unit.

**TIPS FOR TAKING ACTION**

- Group together materials created by the same individual, family, or organization into an archival collection
- Create an initial inventory of collections with location information
- Take a course or visit a web site that teaches archival cataloging

The basic purpose of archival description is to enable the researcher to find both the collection he/she needs and the information within the collection by using various types of written guides (e.g., summary catalog records, detailed finding aids, subject indexes). This prevents rummaging through large numbers of boxes and documents, which can cause handling damage and general disorder. It also means that the researcher is not solely dependent on the personal knowledge of the archivist or other staff member(s) to access the materials. For an online introduction to archival arrangement and description, see the Getty Information Institute's *Introduction to Archival Organization and Description: Access to Cultural Heritage* at www.schistory.org/getty.

If possible, cataloging data for archival and manuscript materials should be automated at the local level using the MARC format. This might be done through an existing online library/museum catalog, or through a stand-alone system that runs on a PC. In addition, there are a number of state-level databases of historical records (e.g., the New York State Historical Documents Inventory). Generally, automated cataloging records are created from information submitted by the repository. Contact the appropriate state library and/or state archives to find out whether such a resource is available.

For unique materials, cataloging records should be entered into RLIN or OCLC (the two major international bibliographic utilities). For smaller institutions without the ability to input records into RLIN or OCLC, cataloging information can be submitted to the National Union Catalog of Manuscript Collections (NUCMC, at http://www.loc.gov/coll/nucmc/), a cooperative cataloging program operated by the Library of Congress. Based on information submitted by the repository, NUCMC's catalogers create MARC records in the RLIN database and establish pertinent name and subject authority headings. The submitting institution must then be prepared to make the cataloged materials available to researchers on a regular basis.

## *Institutional Overview Worksheet*

1. Describe the institution conducting the survey. Provide name, date established, major activities, and pertinent information about the institution's history and the history of the collection(s) being surveyed.

2. What is the institution's mission? Include a copy of the mission statement in the survey notebook.

3. What is the total size of the institution's staff? (FTE = full-time equivalent)

   _____FTE professionals
   _____FTE support staff
   _____student assistants, representing _____FTE
   _____volunteers, representing_____FTE

4. Which staff members work with the collection(s) being surveyed, and what are their duties? If staffing for the collection(s) is part-time, what portion of the staff member(s)' time is spent on the collection(s) being surveyed?

5. What is the institution's overall budget for all of its activities?

6. Does the institution have a long-range strategic plan? Is collections preservation addressed in this plan? Describe the long-range plan and indicate what topics it covers. Copy relevant sections to include in the survey notebook.

7. Does the institution have plans for expansion or renovation in the foreseeable future?

## *Collections Worksheet*

1. Describe the collection(s) being surveyed. For each category of material, estimate and use the unit of measurement that is most convenient (exact counts are not necessary).

| Type of material | Quantity | Unit of measurement (circle one, or specify) |
|---|---|---|
| Books (general) | | Titles / Volumes |
| Rare books | | Titles / volumes |
| Archives | | Items / linear feet |
| Manuscripts | | Items / linear feet |
| Scrapbooks | | Volumes / linear feet |
| Serials | | Volumes / titles / subscriptions |
| Newspapers | | Volumes / titles / subscriptions |
| Microfilm/microfiche | | Reels / fiche / titles |
| Photographic prints | | Items / linear feet |
| Photographic negatives | | Items / linear feet |
| Slides | | Items / linear feet |
| Audio recordings | | Items / linear feet |
| Video recordings | | Items / linear feet |
| Film | | Reels / linear feet |
| Maps | | Items |
| Posters | | Items |
| Art on paper | | Items |
| Other | | Items / linear feet |

2. What does the institution consider the most important areas of these collections? In making this determination, priority may be given to those most heavily used for current activities; those that have long-term research value; and/or those that are rare, unique, or valuable.

3. Does the institution have a written collecting policy? If the institution holds different types of collections (e.g., a historical collection within a public library, a library/archives collection within a museum), is there a separate written mission statement and collecting policy for the collection being surveyed? Copy any existing policies to include in the survey notebook.

4. Have the collection(s) been evaluated to determine that everything in the collection(s) is of long-term value to the institution? If there is a collecting policy, do all the items within the collection meet the criteria set out in this policy? Are there any materials that may be candidates for deaccessioning? What are they?

5. At what rate are the collection(s) expected to grow? (e.g., how much new material would be acquired each year?)

6. Are these collections cataloged according to accepted library and archival practices, as appropriate? Describe the steps patrons and/or staff would take to locate materials of interest within the collection (e.g., are indexes, card catalogs, or finding aids available? Or is access dependent on the knowledge of staff members?).

7. How frequently are the collections used by staff members and by the public? Determine the average number (e.g., per month or year) and type (e.g., staff, historians, genealogists, students) of people who use the collections.

8. What is the institution's relationship with other local collecting institutions? For example, are there cooperative programs or collecting policies?

## *B. Preservation Management*

Preservation management is the process of systematizing preservation efforts so that preservation needs are addressed as part of the institution's daily activities. Individual preservation activities can be (and often are) undertaken in the absence of a systematic institutional preservation program. However, this approach can result in one or two preservation activities (such as housing collections in archival enclosures, or preservation microfilming) being well developed, while others (such as monitoring and improvement of environmental conditions) are neglected. Even in the smallest institutions, a preservation program needs administrative coordination in order to be effective. In order to accomplish this, the institution's senior management (e.g., director, board of trustees) and key staff members must support the preservation program.

The general guidelines for staffing, funding, and preservation policies that follow provide basic background for using the worksheets. This section collects information about the institution's methods for managing preservation (e.g., preservation priorities, staff time and money invested in preservation, preservation activities, level of staff knowledge about preservation).

### 1. Staffing and Funding

There are a number of models for staffing a successful preservation program. Some large institutions have a dedicated preservation administrator and/or preservation department, but in small institutions (and even many medium-sized institutions) this is not realistic. In these institutions, preservation management will need to be a part-time responsibility for one or more staff members.

It is often best for one person on staff to be assigned responsibility for being knowledgeable about preservation issues, and for making (or overseeing the making of) preservation decisions. Even though a number of staff members may carry out preservation activities as part of their regular duties, it is important to have one person responsible for coordinating these activities. However, in some institutions, a committee may be more effective in managing preservation activities. In this case, each member of the committee would oversee a specific area of preservation activity (e.g., disaster planning, environmental control, housekeeping).

**TIPS FOR TAKING ACTION**

- Identify two potential sources of grant funding for preservation projects
- Propose a presentation on preserving historical collections for the next board of trustees meeting
- Arrange to attend a workshop on a preservation topic of interest

An adequate level of staffing is crucial to the maintenance and preservation of historical collections. It is useless to assign preservation responsibilities if staff members do not have time to carry them out. It is important for the institution to make a commitment to providing staff time for preservation. Job descriptions should include preservation activities, and staff members should have time to carry them out.

Preservation education and training of staff and others is also necessary. Facilitating preservation education for the institution's administrator(s) and/or trustees can be very helpful in encouraging institutional commitment. Certainly all staff members with preservation responsibilities must be trained in proper preservation techniques. The staff member or committee in charge of preservation should coordinate this training.

Finally, it is essential for the institution to provide funds for preservation. Money may be needed for supplies, training, and equipment. Effective preservation requires a dependable budget with active administrative coordination, even if the budget is not large at the beginning. The various national, regional, and statewide grant opportunities for individual preservation projects (see the *Resources* section) should be used to supplement, but not to replace, institutional funding.

## 2. Preservation Policy

A preservation policy provides written guidelines for carrying out preservation activities as part of the everyday collections care activities of the institution. Such a policy is best developed over time as preservation activities are systematized. Policies and procedures for the following preventive preservation activities should eventually be included: maintaining security, controlling patron use of materials, processing new collections using non-damaging techniques, loaning collections to other institutions, exhibiting collections according to preservation guidelines, conducting a preservation-quality library binding program, microfilming collections according to preservation standards, monitoring the environment, storing collections according to preservation guidelines, and maintaining records of conservation treatment. In general, clear and well-considered policies that are universally enforced will make preventive preservation measures routine and lengthen the useful life of collections.

## *Preservation Management Worksheet*

1. What does the institution consider its most serious preservation problems? What are the institution's goals for the preservation survey?

2. What steps have been taken to prolong the life of the collections? Include efforts such as upgrading supplies and storage materials, improving environmental conditions, conservation treatment, or microfilming.

3. Does the institution have long-range goals for preservation of its collections? What are they? Is there a written preservation plan? If yes, describe it and indicate what topics it covers. Include a copy in the survey notebook.

4. Are the institution's senior administrators and trustees aware of preservation needs and committed to the protection of the collections?

5. Is there a program of preservation education for trustees, administrators, staff, and/or the public? What does it include?

6. Does the institution have a budget line item devoted to preservation of the collection(s) being surveyed? If not, are some funds devoted to preservation purposes?

    a. In either case, how and for what purposes are these funds allocated? Indicate the approximate level of annual expenditures for specific activities (e.g., microfilming, archival supplies).

    b. What is the source of these funds (e.g., regular budget line, grants, gifts)?

7. How does the institution administer preservation activities? Does one staff member have formal responsibility for preservation activities? Is there a preservation committee? To whom does the staff member or committee report?

    a. What preservation activities does the staff member or committee responsible for preservation routinely carry out or supervise (e.g., environmental monitoring, preservation microfilming, rehousing of collections into archival enclosures, disaster planning)? If a committee is used, what preservation responsibilities does each committee member hold?

    b. What is the level of preservation knowledge of those responsible for supervising preservation activities? Are they knowledgeable about common forms of damage to library and archival materials, their causes, and potential solutions? Are they aware of (or involved in) preservation activity on the local, state, regional, or national level? What opportunities exist for them to maintain and expand their current knowledge of preservation?

8. Are staffing and staff training adequate to carry out basic preservation activities and other needed activities for the collections?

9. Are procedures established to examine the condition of materials in the collections on a regular basis?

10. Are the following issues considered when making decisions about new acquisitions and/or repair, replacement, or conservation treatment:

    a. the relationship of the item to the entire collection?
    b. the research, historical, or artifactual importance of the item?
    c. the projected frequency of use?
    d. the length of time the item needs to be retained in the collection?
    e. the permanence or durability of the media?

# III. SURVEYING THE BUILDING

## *A. The Building*

### 1. Characteristics and Condition of the Building

The building is the outermost shell protecting the collections. It is the first defense against the impact of weather, pollutants, and water. Periodic inspection and maintenance of the roof, walls, gutters, drains, and foundations is an investment in controlling interior conditions as well as in preserving the building itself. Every building that houses historical collections should have a written schedule for maintenance of the exterior and interior of the building. It is also very helpful to keep an ongoing log of building problems, since this will allow staff to refer back to previous problems without having to rely on staff memories.

This section provides an overview of preservation concerns related to the building's structure and condition. The worksheets should be used as a tool to identify problem areas that need to be addressed in more detail. In some cases, particularly if a historic building is involved, separate consultation with a specialist may be needed.

Using the worksheets that follow, examine all areas of the building to the extent possible, both interior and exterior. Walk around the outside of the building to assess the condition of the exterior. If it is possible to get a good look at the roof from a safe vantage point, by all means do so. Inside, tour the attic and the basement, and any other areas that staff might not normally go. Of particular importance, of course, are the areas where collections are stored.

**TIPS FOR TAKING ACTION**

- Begin keeping a log of building problems as they occur
- Meet with the personnel in charge of building maintenance to discuss any chronic building problems
- Acquire or draw a plan of the building, and make notes on any current or anticipated shortage of storage space

During the building tour, remember that adequate space is essential for proper collections maintenance and preservation. Overcrowding materials on shelves and stacking materials on the floor exposes them to distortion, damage during removal and reshelving, and damage from water.

Note where collections are stored and whether the space is adequate and safe. It will also be helpful to get a copy of the building plans at this point, or to prepare drawings of the layout on each floor. This can be used to make notes about building or space problems, and will be helpful later in the survey to mark important information such as the locations of fire extinguishers, water shut-offs, and important collections. Later sections consider specific hazards to the collections, but now is the time to begin identifying any hazards that might exist.

The following worksheet should be used to generate a list of problems or potential problems that can then be prioritized and addressed as part of the institution's preservation plan (and more specifically, as part of its disaster planning process).

## *General Building Worksheet*

1. In what year was the building constructed? _____ Is the building a historic structure?

2. Have additions or renovations been made to the building? ____ If yes, describe them and indicate when they were made.

3. Are renovations planned for the building in the future? _____ If yes, have preservation concerns been addressed with the architect and engineers?

4. What are the predominant materials used in the construction of the building (e.g. wood frame, masonry, steel and poured concrete)?

5. What is the general condition of the building? Has it been well maintained?

    a. Is there a regular schedule of inspections and maintenance of the building (e.g., roof, drains, plumbing)? _____ If yes, who performs inspections and maintenance, and how often? Is there a written schedule for these activities? If yes, attach a copy. Is an ongoing log of building problems kept?

    b. Is there a history of problems with the building (e.g., roof leaks, pipe leaks, flooding, blown fuses, mold growth)? _____ If yes, use a separate sheet to describe in detail.

6. What is the condition of the roof and drains?

    a. Is the roof flat or pitched? If it is flat, does water accumulate on the roof?

    b. What is the roof covering? Are there any signs of damage (e.g. cracking, buckling, deteriorated flashings)? How old is the roof? (Most modern roofing materials have an anticipated life-span of no more than 20 years.)

    c. How does the roof drain? Are gutters and drains well attached, in good condition, and functioning? Are they cleaned routinely?

    d. Are there skylights? If so, are seals or caulking deteriorated?

7. What is the structure and condition of the exterior of the building?

    a. Are exterior surfaces and finishes intact (e.g., are shingles missing, is paint blistered or peeling, has mortar deteriorated, are there accretions on masonry that point to water or condensation problems)?

b. Are there cracks in the foundation or other signs of deterioration?

c. How is the foundation sealed? Do the drains channel water away from the building? Does water accumulate at the foundation?

8. What is the condition of the interior of the building?

a. What are the age and condition of the plumbing system?

b. What are the age and condition of the electrical system?

c. Does the building have an attic or basement? Are collections stored in these spaces? Are these spaces clean, or cluttered and dirty? Is the basement wet or dry?

d. Is there evidence of water leaks inside the building (e.g., around windows, on interior walls, or on ceilings)?

e. Is there any history or evidence of rodents, insects, or mold in the building?

f. Have there been any problems with condensation within the building?

9. Does anyone else occupy the building in addition to the repository being surveyed? ____ If yes, what other activities take place in the building and could they pose a hazard to collections?

10. Provide a general description of the building's layout (e.g., number of floors, number and type of rooms on each floor). *[It will be helpful to acquire or draw a plan of the building].*

11. Indicate on the plan all areas where collections are stored within the building. Also indicate the locations of water pipes, bathrooms, climate control equipment, and any other sources of water in relation to collections storage.

12. Is there a shortage of collections storage space in the building? _____ If yes, what has been done to address this problem?

## *B. The Building Environment*

The following guidelines for controlling the building environment provide background for the next worksheet. This worksheet, along with the "General Building Worksheet" above, provides an overview of environmental conditions in the building. A more detailed examination of environmental issues for each specific storage area is undertaken later.

### 1. Climate Control

Poor environments reduce the life-span of paper and related materials. For paper-based historical collections, control of *relative humidity* is crucial. Moisture provides the catalyst for chemical reactions within paper that lead to acid formation. Paper is hygroscopic; that is, it readily absorbs and releases moisture from the surrounding atmosphere, expanding and contracting as it does so. This adds dimensional changes to chemical deterioration and can accelerate deterioration and cause visible damage such as cockling of pages. Excessive moisture favors insects and also causes mold and foxing. At the other extreme, very low relative humidity (often found in winter in centrally-heated buildings) can desiccate and embrittle some materials.

Control of *temperature* is also important; heat accelerates deterioration by speeding up damaging chemical reactions. A general rule of thumb, based on scientific research, states that the average deterioration rate of organic materials doubles with every temperature increase of about 10°C (18°F). The actual rate of deterioration may be greater for some types of collections. Lowering temperatures in storage areas into the 60's(F) will make a significant difference in deterioration rates. Even lower temperatures will further decrease the rate of chemical reactions, but lower temperatures are difficult to maintain, problematic for human comfort, and may cause further complications, particularly in historic buildings.

**TIPS FOR TAKING ACTION**

- Purchase an inexpensive min/max thermohygrometer and begin writing down climate readings every day
- Turn down the heat a few degrees (keep it at 65-70°F) in the area where historical collections are stored
- Arrange for routine vacuuming of collections storage areas

*Stability* of the climate is also critical to long-term preservation of collections with special value, such as rare books or local history collections. Research has shown that large and frequent fluctuations—such as those that occur if climate control systems are turned off or if settings are altered when the building is unoccupied—greatly accelerate paper deterioration.

There is no national standard for storage of paper collections. The scientific evidence is clear, however: *lower temperatures, lower relative humidities, and stable conditions greatly extend the usable life of paper collections*. The National Information Standards Organization (NISO) has issued a technical report entitled *Environmental Guidelines for the Storage of Paper Records* (see the *Resources*). This publication gives suggested values for temperature and relative humidity for storage of paper records in libraries and archives:

| Situation | Temperature | Relative Humidity |
|---|---|---|
| Combined stack and user areas | 70 °F maximum* | 30-50% RH** |
| Stacks where people are excluded except for access and retrieval | 65 °F maximum* | 30-50% RH** |
| Optimum preservation stacks | 35-65°F*** | 30-50% RH** |
| Maximum daily fluctuation | ±2°F | ±3% RH |
| Maximum monthly drift | 3°F | 3% |

* These values assume that 70°F is about the minimum comfort temperature for reading and 65°F the minimum for light physical activity. Each institution can make its own choice.
** A specific value of relative humidity within this range should be maintained ±3%, depending on the climatic conditions in the local geographic area, or facility limitations.
*** A specific temperature within this range should be maintained ±2°F. The specific temperature chosen depends on how much an organization is willing to invest in order to achieve a given life expectancy for its records.

– from *Environmental Guidelines for the Storage of Paper Records*, p. 2.

As a first step towards climate control, an institution should aim at maintaining stable conditions below 70°F and between 30%-50% RH year round in areas where collections are stored. It is also important to provide good routine maintenance for mechanical equipment (including radiators and air registers) as well as regular servicing.

If possible, the climate in the collections storage area(s) should be controlled separately from the rest of the building. It is more cost-effective (and much easier) to provide tight climate control in a small area, particularly in an area where people do not work routinely. When people move in and out of the room frequently or work for long periods of time, their presence alters the climate in unpredictable ways. For this reason it is best to provide storage for the historical collections separate from where patrons use the collections. This is also a plus in terms of maintaining the security of the collections. The storage room(s) can then be kept cooler and drier through provision of a separate zone within the larger climate control system, or the institution can provide a stand-alone climate control system. The latter is often a good choice for institutions where building-wide improvements to the climate control system are not possible.

Temperature and relative humidity should be systematically documented wherever collections of permanent value are stored. Recorded data will serve to establish existing environmental conditions, support the need for environmental controls (should the need exist), and indicate whether climate control equipment is operating optimally, if such equipment is already in place. Monitoring devices vary greatly in cost, complexity, effectiveness, and staff time required to maintain them and interpret the data. Options include dataloggers, hygrothermographs, and portable digital thermohygrometers. It is important to choose the monitoring instrument most appropriate to the situation. “Monitoring Temperature and Relative Humidity” in *PLAM3* provides more information on setting up a monitoring program. Some regional preservation organizations have environmental monitoring kits that can be borrowed. Contact the appropriate state library, state archives, or regional preservation/conservation facility to find out if such a program is available.

Pay special attention to areas that may have poor air circulation, which can result in significant variations in climate within the same room. For these areas, it is a good idea to acquire multiple monitors or to move monitors periodically. Once conditions have been monitored for some time, they may show that changes are needed to improve the climate. Climate control systems are seldom used optimally, and altering thermostats, replacing filters, using portable dehumidifiers or fans, or even rearranging furniture to provide better air circulation, can sometimes improve the climate.

It is important, however, to evaluate the building's capacity to tolerate major changes in temperature or relative humidity. In some cases, changing the interior climate can pose a threat to the fabric of the building, particularly in a historic building. Also, since temperature and relative humidity are related, correcting one factor may alter the balance of another. It is essential to have the advice of an experienced climate control engineer before making major changes, and monitoring must continue after changes are made. Choose an engineer with experience in evaluating systems for historic structures and collections-holding institutions, and check references from clients with similar needs.

## 2. Control of Pollutants

Good air circulation is important for even climate distribution, the removal of pollutants, and mold control. An effective filtering system is important. Dirt and dust particles soil and abrade paper. Gaseous pollutants such as sulfur dioxide and nitrous oxides (generated from automobiles and industry), peroxides, and ozone catalyze chemical reactions that lead to acid formation in paper. Wooden storage furniture, many contemporary construction materials, and some paint films also produce pollutants (such as formaldehyde) that are destructive to paper and photographs. Exposure of collections to particulate and gaseous pollutants should be controlled to the extent possible.

Routine vacuuming is the first defense against particulate pollutants. Particulate filtration is also important. Particulate filtration equipment varies in size and complexity, from individual filters attached to vents, furnaces, or air conditioners to building-wide systems. Particulate matter must be mechanically filtered if centralized HVAC equipment is in use. Filters should match the needs of the equipment and a regular schedule of cleaning or replacing filters should be followed. Exterior windows should be kept closed, and valuable materials should be enclosed in archival enclosures for protection. Control of gaseous pollutants in large areas is expensive and requires significant equipment, space, and maintenance. For most smaller institutions this is not practical, but if it is considered first seek the advice of a professional climate control engineer.

## 3. Control of Light

All light accelerates paper deterioration by providing energy to fuel damaging chemical reactions within paper. Although the ultraviolet (UV) component of light (present in natural light and artificial fluorescent, mercury vapor, or metal-halide lamps) is the most damaging, visible light is also very damaging. Light causes paper to fade, yellow, or darken, and media to fade or change color. Damage is cumulative and irreversible. The intensity of the light and the length of exposure determine its extent.

Collections of permanent value are best stored in areas with no natural light and low levels of incandescent light. A great deal can be done to control natural light through judicious and careful use of shades, drapes, blinds, or shutters. These also minimize heat loss and heat gain from sun during the day. Skylights should be covered to block the sun. Visible light is measured in lux. For paper-based collections that are directly exposed to light (through exhibition or use), a maximum of 50 lux is recommended. However, collections can be damaged at this light level over a period of time (even though most people find 50 lux to be very dim). As noted in the section on exhibition later in this guide, original paper-based materials should be exhibited only

**TIPS FOR TAKING ACTION**

- Install UV-filtering sleeves on fluorescent lights in collections storage and use areas
- Remove trash from the building every day
- Close shades or curtains when the historical room is not in use

for a limited time, and copies should be exhibited whenever possible. Overall, protecting collections from light exposure through enclosure in boxes or other containers is the best strategy.

Levels of UV light should be no higher than 75 microwatts/lumen. This must be measured with a UV meter. In practical terms this means that most light sources must be filtered to remove UV light. Fluorescent lamps emit significant UV light and require filtering in areas where collections of value are stored. Filters are available in the form of soft, thin plastic sleeves or hard plastic tubes. It is important to ensure that these are properly sized so that unfiltered light does not slip by at uncovered ends. UV-filtering film or Plexiglas can be applied to windows and exhibit cases in order to control the amount of UV to which collections are exposed, but this does not reduce the damage caused by visible light.

See “Protection from Light Damage” in *PLAM3* for more information.

## 4. Pest Control/Housekeeping

Paper and associated materials are appetizing to insects and rodents. Dust, dirt, clutter, and food remains attract vermin, and food odor is one of the cues to pests that a space may be hospitable. The consumption of food in or near collection storage and use areas needs to be strictly controlled, and all areas must be kept as clean as possible.

Eating and drinking should be prohibited in areas where paper-based collections are stored and used. This rule should be enforced for staff as well as patrons whenever possible. It is best to provide a lounge/kitchen area and prohibit staff members from having food at their desks. If this is not possible, food must be kept away from collection materials and a single covered garbage can should be provided for food waste. The bag in this garbage can should be changed and all food waste should be removed from the building daily. If food must be served at special events, it should be cleaned up promptly and all waste should be removed from the building.

Systematic housekeeping is important, since dust and dirt also provide a hospitable environment for pests. In most institutions, either an outside cleaning service or in-house janitorial staff performs general housekeeping tasks (vacuuming, dusting, mopping floors). These workers should not use harmful cleaning techniques, such as wet mopping near collections on lower shelves. It is best to require the use of a vacuum equipped with a HEPA filter for general cleaning of collection storage areas. This will pick up dust and dirt rather than recirculating it. Workers should also be trained to report any signs of pest activity that they may come across (e.g., droppings, insect bodies). If possible, have storage areas cleaned at times when a staff member can be present.

Current preservation practice does not recommend extermination for pest problems except as a last resort, due to the toxic nature of pesticides. Instead, a strategy termed "integrated pest management" is suggested. This involves removing the habitats and sources of food for pests and regularly monitoring the space for the presence of pests. In cases where problems do not respond to preventive techniques, direct treatment for insect infestation may be necessary. Non-chemical means of treatment are preferred. The most promising methods currently being explored are controlled freezing and the use of modified atmospheres. “Integrated Pest Management” in *PLAM3* provides more information.

## *Building Environment Worksheet*

*Temperature and Relative Humidity*

1. What machinery controls temperature and relative humidity? Describe its age and type.

    a. If the building is air conditioned, does the system also provide humidification and dehumidification? Does the equipment work?

    b. Does the climate control equipment operate 24 hours a day, 365 days a year in the areas where historical collections are stored?

2. What temperature and relative humidity is the climate control system designed to maintain? Does it do so?

3. What is the average actual temperature and humidity inside the building? Estimate if necessary and indicate prevailing conditions in the summer, winter, and during transition periods in spring and fall.

4. Is the environment in collections storage areas monitored on a regular basis? What equipment is used? Is the equipment regularly calibrated?

*Pollution*

1. Is there a mechanism for air circulation throughout the building? Are vents blocked by furniture or collections? Does air circulation seem to function effectively?

2. Where is the intake for building air replacement located? Does it take in vehicle exhausts, building exhausts, and so forth?

3. Is the air circulation system equipped with filters? To what level of protection? Do they filter particulate material, or particulates and gases?

5. Are all filters changed regularly? How often? By whom?

6. Is smoking prohibited in the building?

*Light*

1. What are the sources of natural light in collections areas?

2. Is sunlight entering the building controlled to minimize intensity and remove ultraviolet radiation?

3. Are shades, curtains, or blinds shut when sunlight is direct? When the room is not in use? When the building is closed?

4. What type of artificial lighting is used? If fluorescent lights are used, are they shielded to filter ultraviolet radiation?

5. Are lights turned off when collection storage areas are unoccupied?

6. How much light exposure do collections receive (e.g., are they mostly housed in boxes, how frequently are they used, are they exhibited)? How bright is the light? Has exposure been measured using a light meter or a UV meter?

*Pests*

1. Is there any history of insects, rodents, or other pests in the building? Is extermination done routinely? What is used? Is it effective? Is it necessary? Is the institution knowledgeable about integrated pest management strategies?

2. Are food and drink prohibited in collections areas?

3. If food is consumed in the building (by staff in offices or a staff room, or during special events), is a closed container provided for food waste, and is the staff instructed to use it?

4. Is garbage removed from the building daily? Immediately following events that include food?

5. Is there a well-planned and supervised housekeeping program? What does it include? Who does the work? Who supervises it and maintains quality?

## *C. Protecting Collections from Loss*

This section deals with protecting collections from loss through theft and from damage by water and fire. Some of the questions concern policies and procedures for dealing with potential disasters and for providing routine access to collections. Answers require more than simply making observations within the building. It may be necessary to consult other staff members regarding written and unwritten procedures (and perhaps, the difference between written procedures and what is actually done) for disaster response and security.

The following four worksheets may be used in conjunction with the "General Building Worksheet" and the "Building Environment Worksheet" during the initial building walk-through. However, it may be easier to do a separate walk-through focusing on specific hazards to collections and security issues. Questions that cannot be answered during the building walk-through(s) should be addressed with appropriate staff members later.

### 1. External Threats

When considering ways to protect collections from loss, investigate the different emergencies that might affect the institution. Although internal hazards from water and fire (e.g., water pipes, poor electrical wiring) are obvious threats, disaster planning must also take into account the physical location of the institution and its vulnerability to threats from outside the building. Often such events will result in water or fire damage. External threats might include acts of nature such as hurricanes, tornadoes, flash flooding, wildfires, and earthquakes. They also include manmade threats, such as water main breaks, gas leaks, proximity to construction sites and industries using hazardous materials, or the possibility of arson or bomb threats. Every institution's vulnerabilities will be different, and geographic location is an important determining factor. It is essential for staff members to think carefully about what external threats are most likely to occur and to plan for them.

### 2. Water Protection

**TIPS FOR TAKING ACTION**

- Raise collections at least four inches off the floor in all storage areas
- Install water alarms in areas where water leakage is a problem
- Diagram the location of water pipes and shut-off valves

Paper-based collections are highly susceptible to damage from water. Mold growth is an additional danger if moist conditions are present. As noted previously, the best insurance against water damage is regular inspection of roof covering and flashings, with repair and/or replacement as needed. Clean gutters and drains frequently. Avoid storing collections underneath water or steam pipes, bathrooms, mechanical air-conditioning equipment, or other sources of water. Keep materials at least 4" off the floor on shelves or pallets to avoid flood damage. Also avoid storing collections in basements or other areas vulnerable to flooding. If storage in such areas is necessary, install water-sensing alarms so that quick detection of flooding is assured. These must be monitored 24 hours a day to be effective; such alarms can usually be connected into the existing fire detection system. Staff should familiarize themselves with the location and operation of water mains and shut-off valves so they can shut off the water supply during an emergency.

## 3. Fire Protection

It is a high priority to equip any repository that houses valuable collections with appropriate heat and smoke detectors throughout. To be effective, these must be monitored 24 hours a day through a direct connection to the local fire department or another service provider. Fire detection devices include manual alarm stations, heat detectors, and smoke detectors. Fixed-temperature heat sensors detect smoldering fires inefficiently. Rate-of-rise sensors are better, since they are activated by a sudden, small increase in temperature, but in general heat sensors do not work until temperatures in the room are quite high. Smoke sensors, on the other hand, are designed to detect a fire while it is still in its incipient stages. Often a combination of different types of detectors will be used, depending on the building construction and other needs; contact an appropriate fire professional to determine the best type of system. Test all detectors at least quarterly (monthly is preferable) and maintain them regularly as recommended by the manufacturer.

Eliminate all existing fire hazards and hold regular fire drills. Repositories should be equipped throughout with portable fire extinguishers. Staff must be trained in their use, and extinguishers must be inspected annually. Most local fire departments will provide fire inspections and assist institutions in developing a fire safety program. If the fire department is familiar with the building and collections in advance, there is a greater chance that fire-fighting strategies may be able to take collection priorities into account.

**TIPS FOR TAKING ACTION**

- Survey storage areas for fire hazards (electrical wiring, obstructed exits, etc.)
- Insure that fire detection equipment is adequate and test it quarterly
- Arrange to hold a fire drill

The preservation community's recommendations for fire suppression have undergone significant changes in the past 10-15 years. For a variety of reasons, including its effect on the environment, Halon is no longer recommended for new installations. The search for a substitute has been underway for some time, but no completely satisfactory chemical replacement has been found. Modern wet-pipe sprinkler systems are increasingly recommended for libraries, archives, and museums, due to their relative low cost, ease of maintenance, and dependability. The rate of accidental discharge has been estimated at 1:1,000,000 heads or better, and studies have indicated that 70% of library fires are extinguished by three or fewer sprinkler heads. These statistics, combined with new, technologically sophisticated methods of drying water-damaged books and paper (i.e. vacuum freeze drying), make sprinklers in libraries a better choice than they once seemed.

An emerging fire-sprinkler technology that shows great promise is the water mist system. Water mist sprinklers will deliver water at exceptionally high pressures, producing a fine, high-efficiency water vapor. This will maximize water's cooling capacities, thereby extinguishing fires with minimal amounts of water. See “An Introduction to Fire Detection, Alarm, and Automatic Fire Sprinklers” in *PLAM3* for additional information on fire protection.

## 4. Disaster planning

Emergency preparedness—efforts to prevent damage from fire, water, and other hazards—has become routine preservation practice in libraries and archives in the past decade. It is understood that every institution with collections of enduring value should evaluate its risk of events that could damage holdings. Plausible risks should be addressed and reduced, and the institution should prepare a formal, written plan for responding to emergencies. It is particularly important to have a written disaster plan in

place before any construction and/or renovation project begins, since collections are particularly vulnerable during such projects.

In most cases, an emergency or disaster will involve water damage. The importance of quick response to prevent additional damage and/or mold growth cannot be overemphasized. It is essential to stop the source of water, clean up any standing water, lower the humidity, and dry or freeze the collections as soon as possible. Mold will grow on wet materials in about 48 hours if they are not dried or frozen. Dehumidification drying is often used to dry out buildings after severe water damage. Collections can be air-dried (if only a few items are involved, if the damage is minimal, and if sufficient space is available), but this often results in distorted paper, bindings, and text blocks. For large numbers of wet items, freezing followed by vacuum freeze-drying usually produces the best results. Note that it generally takes some time to transfer collections to the vacuum freeze-drying vendor, and there are only a few vendors that provide this service to libraries and archives. Wet collections must almost always be frozen locally first and the quicker, the better—perhaps at a local supermarket or college food service.

Among the most important elements to include in a disaster plan are:

- Contact information for providers of local freezing services, building dry out services, and vacuum freeze-drying services.
- A stockpile of basic supplies for responding to a small disaster (see "Tips for Taking Action" and be sure to note their location so they can be easily found).
- Contact information for the purchase of additional disaster supplies (e.g., fans, plastic milk crates, blank newsprint).
- A source for emergency funds (how will money be accessed if it is needed during the night or on the weekend?).
- Information on staff and volunteers who will assist in case of a disaster, including home phone numbers.
- Recommended procedures for drying books, documents, and photographs (hold a training session so that all staff are generally familiar with them).
- Identification of priority items to be rescued in a disaster (mark their locations on a map of the building, including the location of keys to locked areas, although for security reasons, this section of the plan would be distributed only to a few key staff members).
- Location of backups of collection records (e.g., a complete inventory of the collections) and administrative records (e.g., computer files) that are stored offsite

**TIPS FOR TAKING ACTION**

- Put together a list of local freezer sources that could be used to store wet collections
- Determine what insurance coverage exists for the collections
- Make a list of priority collections that would need to be rescued in a disaster
- Acquire some basic supplies for quick emergency response (e.g., first aid kit, flashlight, plastic sheeting, mop and bucket, paper towels, sponges, plastic garbage bags, rubber gloves, scissors, tape, waxed or freezer paper, paper and pencils, clipboards, waterproof pens, disposable camera)

Another important aspect of disaster planning is the provision of insurance for collections. Some institutions that are very large or are part of a larger institution (such as a university or a government agency) are self-insured, but many smaller institutions must purchase insurance. Regardless of the type of insurance, every institution should know what coverage it has, what risks are covered in the policy (e.g., hurricanes, but not earthquakes), what the insurance would pay for (e.g., repair, replacement), what

procedures are required in the event of a disaster, and what documentation is required to prove that loss has occurred. With historical collections (some of which may be difficult to value and impossible to replace), it is a good idea to investigate special coverage.

It is essential to keep all names, phone numbers, and other information in the disaster plan up to date and to be sure that all staff members know how to implement the plan. Someone should be assigned responsibility for updating the plan and reviewing it with staff periodically. This person should be given time for these activities, and they should be part of the person's job description.

Many books, articles, and sample disaster plans are available to assist with disaster planning. The "Emergency Management" section of *PLAM3* includes several leaflets on salvage of collections, as well as a template for collecting information for a disaster plan. The *Resources* section of this guide lists several basic texts on disaster planning, and Conservation OnLine provides links to sample plans and additional resources (see http://palimpsest.stanford.edu/bytopic/disasters/).

## 5. Building Security

Preservation efforts are moot if collections are lost to theft, fire, or vandalism. Since an estimated 70% of library fires are arson-related, a dependable 24-hour automated security system is essential, in addition to an automatic fire detection system with a 24-hour monitoring system.

Access to collections must be controlled during working hours, and the building must be well secured when it is closed to the public. It is best to install perimeter intrusion alarms and internal motion detectors wired directly to the local police department or to another outside monitoring agency. To control access during working hours, as well as loss of materials, it is best to limit open entrances, ideally to only one used by patrons and staff alike. All other doors should be alarmed to detect unauthorized use. Local fire regulations may require crash bars on emergency exits.

Collections-holding institutions should not use master key systems. Building keys and keys to areas where special collections are kept should be limited to staff with a demonstrated need. A formal key-control system should be in operation, ensuring that the list of key holders is kept current, and that staff members are required to return keys when they leave the employ of the institution.

See "Collections Security: Planning and Prevention for Libraries and Archives" in *PLAM3* for more information.

**TIPS FOR TAKING ACTION**

- Require researchers to fill out a registration form before using collections
- Require researchers to store personal belongings in a secure area outside the research room
- Have staff members examine collection materials before and after use to insure that nothing is missing or damaged

## 6. Controlling Access to Collections

Researchers' use of valuable materials must be carefully controlled and strictly monitored. Theft and vandalism are unfortunately more common than many staff members believe, particularly in small institutions where supervision is limited and staff may give some researchers special privileges. Ideally, researchers should use special collections in a supervised room or area adjacent to the locked storage room where collections are kept. Personal belongings should be left in a locker outside the research room. Researchers should sign a register and be required to fill out a call slip for the materials. This information should be retained to help identify the last date of use or the last user in case of loss.

Researchers should be supervised at all times when they are using collections, but this can be difficult (and sometimes impossible) when staffing is limited. One way to minimize risk is to require the researcher to leave an identification card with the staff (e.g., a driver's license). A locked storage drawer for these items will be necessary. Staff members would then inspect materials before and after use for theft or vandalism. The identification card would be returned only when all items have been returned without damage.

See "Collections Security: Planning and Prevention for Libraries and Archives" in *PLAM3* for more information.

## *External Threats and Water Protection Worksheet*

External Threats

1. What is the history of natural (e.g., flood, hurricane, fires, earthquake) or man-made (e.g. water main failures, gas leaks, bomb threats) emergencies in the vicinity of the institution?

2. Have external events damaged historical collections in the past? How long ago? What was the extent of the damage?

3. What external threats would most likely cause damage in the future?

Water Hazards

1. Have the collections undergone significant damage from water (e.g., flooding, water leaks, mold) within the last five years?

2. Where are bathrooms, sinks, kitchens, and other plumbing, and where are collections in relation to them?

3. Are there any sources of water within the climate control system (e.g., air conditioners, circulating water)? Where are these in relation to collections?

4. How old is climate-control equipment and plumbing? Is it well maintained? Are pipes inspected for signs of corrosion, failed seals, or other damage? Is there any history of leaks?

5. If collections must be stored where they are vulnerable to water damage, is there a water alarm system in place that is monitored 24 hours a day?

6. Are all collections stored at least 4 inches above floor level in all areas?

## *Fire Protection Worksheet*

1. Have the collections undergone significant damage from fire within the last five years? If yes, please describe.

2. What types of fire detection devices are installed (e.g., smoke sensors, heat sensors)?

    a. Is the detection system connected to a 24-hour monitor?

    b. What and where is that station or agency? What would the speed of response to an alarm be?

    c. Is the detection system regularly maintained and tested? By whom?

3. Is there an automatic fire suppression system? What is the equipment (e.g., Halon, sprinklers, other)? Is the suppression system regularly inspected and tested? By whom?

4. If there are sprinklers, are they wet pipe, dry pipe, or pre-action?

    a. What is the activation temperature for the sprinkler heads?

    b. Do the heads discharge individually?

    c. Is there a sensor to automatically stop the water flow when the fire is extinguished?

    d. How would an accidental discharge be detected and controlled?

5. Are portable fire extinguishers available? Where? What type? Are they inspected yearly? Has staff been trained to use them?

6. Is there an evacuation plan for the building? Are fire drills held? How frequently?

7. Has there been a fire safety inspection of the building by the Fire Department or Fire Marshal within the past year?

8. If there is a book drop that opens into the building, how is it secured against vandalism or arson? Is there a smoke/heat detector directly above the opening? Could the book drop be eliminated?

## *Disaster Planning Worksheet*

1. Does the institution have a written disaster plan? _____ If yes, when was it first prepared? _____

    a. Who is responsible for implementing and updating the plan?

    b. Has it been updated within the last year?

2. Have any staff members been trained in disaster planning and/or disaster recovery? How many? What is their position?

3. Are basic supplies for emergency response on hand and reserved only for emergencies (see list provided in text)? Where are they stored?

4. Is updated contact information available for potential service providers (e.g., local freezer storage space for wet collections, vacuum freeze drying vendors, building dry out vendors)?

5. Are duplicate collection records stored off-site?

6. Has staff identified salvage priorities for the collections in the event of a disaster? Does the fire department know these priorities?

7. Have staff responsibilities for disaster response been assigned, and does everyone know his or her role? Do staff members have a basic familiarity with methods for salvaging wet collections? Are periodic training sessions held?

8. Are collections insured against disaster damage? What risks are covered? What costs would the insurance cover (e.g., labor, vacuum freeze drying, conservation, freezer space)?

    a. Are collection records current and detailed enough to satisfy the insurer? What procedures does the insurer require in the event of a disaster?

    b. Is special insurance coverage needed for valuable portions of the collection?

## *Security and Access Worksheet*

1. Does the building have an automated intrusion alarm system? What types of alarms are provided (e.g., motion detectors)? Is the system monitored 24-hours a day? By whom?

2. Does the building have window locks, alarmed doors, or security guards?

3. How are use and distribution of keys controlled? Who has keys to the building? Is there a mechanism for distributing and collecting keys for new or terminating employees?

4. Where are the historical collections located within the building? Who has a key to this area? Who can access this area during working hours (e.g., all staff, some staff, the general public)?

5. Describe the current procedures for access to and use of the historical collections:

    a. Are researchers asked for positive identification? Are they required to fill out a registration form? Are researchers required to fill out call slips to document which collections they use? Are all forms retained by the institution?

    b. Are materials of special value counted out for researchers, returned, and checked by staff before additional materials are issued?

    c. Are all researchers in view of a staff member at all times? Are tables and desks positioned to provide optimum supervision by staff? Are researchers ever left unsupervised when they are using valuable materials?

6. Has a staff member been assigned responsibility for security management?

7. Are there written rules for use of the historical collections, and are these distributed to researchers?

8. Is there a written closing procedure for the building? Who is responsible for checking the building each evening?

## *D. Individual Storage and Exhibition Areas*

Separate photocopies of the following worksheet should be used to evaluate each individual storage and exhibition space. These worksheets can cover only the basic issues. However, they may lead to additional pertinent observations by the surveyor; these should be recorded on a separate sheet.

Many of the questions for the building as a whole also apply here (e.g., climate, light sources, water hazards). Using an individual worksheet for each room will allow the surveyor to record more detailed observations and to describe areas that do not conform to observations of the building as a whole. In many repositories, conditions can vary a great deal from one room to the next.

Each space should be examined carefully. If the surveyor has access to environmental monitoring equipment (such as a min/max thermohygrometer) or to light monitoring equipment (such as a light meter or a UV meter), it will be helpful to take readings in each space, at different times of the day if possible.

Note that this worksheet covers primarily environmental, emergency preparedness, and security issues. It does not cover storage furniture or collections in any detail. There is space at the top of the worksheet to give a brief overview of the furniture and collections in the room, but these subjects will be considered in the next part of the survey.

## *Worksheet For Individual Storage/Exhibition Areas*

(Use one sheet for each space to be surveyed)

Name of Room: _____ Approximate size of room: _____

Location in Building: _____

What historical materials are stored in the room?

What types of storage furniture are in the room? Is there a shortage of storage space?

Temperature and Relative Humidity

1. What climate control equipment serves the space? Is there heating? Cooling? Humidity control?

2. What are the current temperature and relative humidity (on the day of the survey)?

3. What are the normal temperature and relative humidity in the space? Are there fluctuations during the year?

4. Are temperature and humidity monitored in the space? How?

Pollution

1. How are pollutants controlled in the space? Is there a coating of dust in the collections storage areas that might indicate inadequate filtration? Are page edges significantly more discolored or brittle than their centers? This also suggests a high level of pollutants.

Housekeeping/Pests/Mold

1. Is the space clean or dirty? Is it cluttered? What is the housekeeping schedule for the space?

2. Are there any indications of pest infestation (e.g., droppings, insect bodies, shredded paper, stains or damage in bindings or paper)? Is there a history of pest infestation in the space?

3. Is there evidence of current or past mold on collections? Is there a history of mold in the space? Have the leaks or climate conditions responsible been corrected?

Light

1. What artificial lighting is used in the space? If fluorescent, is UV light filtered? What are the light levels?

2. What are the number, type, and size of windows in the space? What direction do they face? Do they have shades or drapes? Are these used, and if so, when? Are the windows filtered to remove UV light and reduce the intensity of visible light?

3. Is there evidence of light damage to collections (e.g., faded media, yellowed paper, faded bindings or spines)?

Water Hazards

1. Are there water-bearing pipes in the room? Where are they in relation to collections?

2. Is there any evidence of current leaks on the walls or ceiling? Is there evidence of previous water damage (e.g., stains, efflorescence, plaster damage, mold), especially in basement and attic areas?

3. If there are known water hazards in this space, is an alarm system in place?

4. Are all collections in this space at least 4" above floor level?

Fire Hazards

1. What electrical equipment is in use in the space? Is the wiring adequate? Is there any history of blown fuses or electrical failure in this space?

2. Is the space equipped with smoke and/or heat detectors? A portable fire extinguisher? Automatic fire suppression?

Security

1. Is the space accessible to the public, or to staff only?

2. Is the space kept locked? _____ Is there a security system? _____ If so, who has a key and/or an access code? Does everyone who has access to the space actually need it?

3. If researchers are allowed in the space, are they observed at all times?

# IV. SURVEYING THE COLLECTIONS

## *A. General Storage and Handling Practices*

This section assesses the institution's overall storage and handling practices. All storage furniture used to house collections should be evaluated to determine whether it is damaging to collections. The general quality of storage enclosures should also be considered. This information could be gathered in conjunction with the survey of individual collection spaces.

This section also covers handling, initial processing, and periodic cleaning of collections. Gathering this information may require the surveyor to collect information from a number of different sources (e.g., technical services and housekeeping staff) in order to put together a complete picture of current practices.

### 1. Storage Furniture

The choice of shelving materials is important for the preservation of historical collections. Storage furniture can produce by-products that react to form acids and other damaging chemicals in the presence of moisture and oxygen. This can be a serious problem in closed furniture like map cases, file drawers, locked bookcases, or exhibit cases, where pollutants can build up. Historical materials stored in closed cabinets should always be protectively enclosed.

Wood has traditionally been used in the manufacture of furniture, but it emits numerous reactive chemicals that can damage collections. This can also be a problem with wood composites (plywood, particle board), sealants, and adhesives. Emissions are highest when the furniture is new, but some off gassing continues for the life of the furniture. It is best to avoid wood furniture altogether. If wooden shelving, map cases, or file cabinets must be used, the wood must be sealed, and shelves and drawers should be lined with a barrier material as well. These measures will reduce (but not completely prevent) off gassing. See "Storage Furniture: A Brief Review of Current Options" in *PLAM3* for more information.

Standard open metal library shelving with a baked enamel finish has been recommended for storing unenclosed books or boxed collections. It is possible, however, that baked enamel coatings may give off formaldehyde and other volatiles harmful to collections if the coating has not been baked long enough at high enough temperatures. This is primarily a concern when collections are stored on bookshelves in an area that is enclosed or has poor air circulation or in closed furniture such as map cases, file cabinet drawers, and bookcases with solid doors. The only way to be sure that baked enamel furniture is not harmful is to have it tested.

**TIPS FOR TAKING ACTION**

- Relocate collections from wooden to metal shelving.
- Evaluate storage enclosures to determine whether the enclosures currently being used are archival
- Purchase a pH pen and use it to spot check archival enclosures, since even reputable vendors can make mistakes

Alternatives that appear to avoid the problems of baked enamel are powder-coated or anodized aluminum furniture. Open chrome-plated steel shelving, made of heavy-gauge, chrome-plated steel wire, can also be used, but only for boxed materials. The wires can leave permanent marks on items that are not

protected with boxes. See “Storage Furniture: A Brief Review of Current Options” in *PLAM3* for more information on storage furniture.

## 2. Archival Enclosures

Choosing storage enclosures that protect collections is one of the most important actions that can be taken to extend the life of collections. The term "archival-quality" is used in the preservation field to describe storage enclosures that do not contribute to the long-term deterioration of the materials housed within them and that provide physical and chemical protection for those materials.

Paper storage enclosures that are themselves acidic will increase the deterioration of the materials they hold. "Acid-free" or neutral enclosures (pH 7.0-7.5) absorb a limited amount of acid before they themselves become acidic and begin to decay. "Lignin-free" or low-lignin paper is produced from cotton or linen or other materials from which the lignin (a natural component of wood that darkens when exposed to light) has been chemically removed. “Buffered” or “alkaline buffered” enclosures contain an alkaline substance (the buffer) to raise the pH of the paper so it can absorb and/or neutralize a certain amount of acid. Lignin-free, buffered enclosures (pH 8.5 or above) actively reduce the sources of acid damage, and they are preferred for most paper-based materials. Enclosures for photographic materials should pass the Photographic Activity Test (PAT); see “Photographs and Negatives” (section IV.B.4) below for details. Note that it is also important to use archival paper when reformatting collections; see “Preservation Photocopying” (section IV.D.2) below for more information.

There are no standards governing the use of the terms "archival-quality" and "acid-free"—and they are sometimes misused, so read suppliers' catalogs and product descriptions carefully. If there are questions about a product, ask the supplier for details. If that information is not forthcoming, find another supplier. “Preservation Suppliers and Services”, available at NEDCC’s web site, http://www.nedcc.org, provides an up to date list of suppliers.

Plastics used for storage enclosures cannot be “acidic’ in the way that paper enclosures can, but they do vary greatly in chemical stability. Polyethylene and polypropylene are relatively stable. Conservation grade polyester (Mylar D or equivalent) is very stable. Polyvinyl chloride (PVC) and cellulose acetate are not stable and are not considered suitable for archival enclosures. Note that even when considering the relatively stable plastics, it is important to ensure that they do not contain plasticizers, surface coatings, UV inhibitors, or other materials that may react with collections.

Storage materials should also protect objects physically from the damaging effects of environment and handling. Abrasion, tearing, breakage, and other physical or mechanical damage can be reduced through the use of enclosures that fit properly and provide good support. See “Selection of Suitable Storage Enclosures for Books and Artifacts on Paper” in *PLAM3* for more information.

## 3. Handling and Processing of Collections

Damage to collections through carelessness may be more common than theft or vandalism, but it often goes unrecognized. Careless handling—whether during shelving, retrieval, photocopying, or researcher use—can cause significant damage to collections over the long term.

It is essential to educate staff and users in the proper ways to handle collections. Regular training sessions should be held for staff, student workers, and volunteers—anyone who handles collections regularly. Users must also be instructed in proper handling methods. A combination of written

instructions (included with the registration form for the researcher) and verbal instruction by the librarian or archivist is usually the most effective. A number of videotapes and other instructional materials are available for staff and user training; see the *Resources* section of this guide.

Handling

Books should not be pulled off shelves by the headcap, a practice that can tear the headcap and spine. Books on either side of the desired book should be pushed in and the center book pulled out gently with a finger on either side of the spine. Books should not be stacked too high when they are moved or carried, to minimize chances of dropping them.

Books are often unnecessarily damaged during photocopying. Photocopy machines with flat copy platens sometimes necessitate jamming the binding flat in order to get a good image. Machines with edge platens allow a book page to be copied with the book open only to 90 degrees instead of 180 degrees. Such machines are highly desirable for institutions in which historical books must be photocopied frequently. If acquiring such a copier is not possible, careful handling must be substituted for a well-designed machine.

Handle documents carefully to avoid tearing, folding, or accidental marking. Reference photocopies should be made of frequently consulted materials. These should be used for general research purposes to cut down on handling of the originals. Historical materials and volumes with permanent research value should only be photocopied by staff members (not by researchers), and only if it can be done without causing damage to the objects themselves.

Proper handling is also critical to preservation of photographic materials. Dirt and oils from fingers are disastrous to emulsions, so cotton gloves should always be worn. Whenever possible, photocopies or copy prints should be used for general research purposes to cut down on handling of originals.

**TIPS FOR TAKING ACTION**

- Initiate a training session for student workers or volunteers who routinely handle collections
- Put up signs near photocopiers to encourage careful handling
- Restrict photocopying of fragile materials
- Provide cotton gloves for handling photograph collections

Proper workspace is essential to proper handling. Aisles and work surfaces for using oversized materials must be large enough to allow them to be handled without damage. A work surface large enough to support the object should be close to the storage area.

Collections Processing

Improper processing of historical collections can also cause unintended damage. During processing, all acidic inserts (bookmarks, scraps of paper, pressed flowers) should be carefully removed from books so that the acid they contain is not transferred to pages. Damaging fasteners and enclosures should be removed from archival collections, and highly acidic paper should be segregated from better quality paper. News clippings and other obviously inferior papers must be removed from direct contact with historical documents and manuscripts. Informational news clippings can be photocopied onto buffered paper.

Adhesive labels, pockets, bookplates, and bar codes are all common in libraries and archives. Pressure-sensitive adhesives should never be applied to materials of enduring value. Backings deteriorate and fall off, leaving a sticky residue; all tested adhesives have shown themselves to be unstable over time.

Some can be removed with powerful solvents, but in the worst case the adhesive will permeate paper or binding material and become completely unremovable.

Call numbers should not be painted on books that are rare or have special value, nor should they be typed on labels taped to the volumes with pressure sensitive tape. Paint is disfiguring; tape may discolor and stain the binding. Instead, call numbers should be typed onto heavy, buffered paper flags placed inside the volume. These flags should be about 2" wide, and 2-3" longer than the book is high. The commercially available "notched" flags will break brittle paper. As an alternative, polyester jackets can be made for books of special value that do not require boxing (see "Polyester Film Book Jacket," in *PLAM3*). Pressure-sensitive adhesive labels can be attached to the protective jacket.

Unfortunately there is no satisfactory solution to the problem of call numbers and other labels on books of undetermined artifact value, and books with long-term research value fall into this group. One strategy is to use a polyester book jacket fastened with 3M double-sided tape no. 415, and to label the jacket. If bookplates or pockets are used in books of enduring value, they should be made of low-lignin, alkaline paper and attached with a stable, reversible adhesive, preferably wheat starch paste or methyl cellulose.

## 4. Cleaning Collections

A general cleaning of books, archival storage boxes, and shelves at least once a year will extend the life of collections. Collections should be removed from the shelves, and dust and dirt should be carefully vacuumed from books and boxes, preferably with a HEPA filter vacuum to prevent recirculation of dust through the exhaust. The shelves should then be cleaned. Generally this involves vacuuming, then wiping with a clean rag or magnetic wiping cloth, which attracts and holds dust with an electrostatic charge. The materials should then be returned in the proper order. Shelves that are thickly coated with dust may need to be washed with a mild detergent, but take care that shelves are completely dry before reshelving books. To avoid the use of water around collections, heavy accumulations of dust should not be allowed to build up.

Since cleaning has the potential to damage books, volunteers or other personnel with this responsibility must be taught careful handling techniques. If a collection has valuable, damaged, or fragile bindings, these should be cleaned only as necessary, at the discretion of the librarian or curator. Sometimes fragile items can be vacuumed, placing cheesecloth over the vacuum nozzle, but it some cases it may be necessary to have items cleaned by a conservator.

Detailed instructions on cleaning collections can be found in “Cleaning Books and Shelves” in *PLAM3*. For institutions with large collections of books, additional information on managing a stacks cleaning project can be found at the University of California at San Diego (UCSD) Libraries Preservation Department web site, at http://orpheus.ucsd.edu/preservation/iguide.html.

## *General Storage Worksheet*

1. Who on staff is responsible for choosing shelving units and storage materials?

2. What kinds of storage furniture (e.g,. map files, compact shelving, free-standing shelves, file cabinets, microfilm cabinets) are in use?

3. Is sufficient furniture available for orderly, uncrowded storage of all collections?

4. Are shelves or cabinets large enough to support objects completely?

5. Is there good air circulation around collections?

6. Are wooden shelving units or cabinets used for storage of historical collections? Where and for what materials?

    a. What type of wood is used? Are any composite materials used, such as particleboard or plywood?

    b. Have these storage units been sealed? With what?

    c. Is there any barrier (e.g., archival box, phase box, metallic laminate, glass, Plexiglas) between collections and wood?

7. In general, what types of enclosures are used for collections?

    a. Are plastic enclosures made from stable plastics?

    b. Are paper enclosures lignin-free and buffered?

    c. Do photograph enclosures pass the Photographic Activity Test?

8. From what supplier(s) does the institution purchase enclosures?

## *General Handling Worksheet*

1. Are all staff members who handle collections trained in proper handling procedures?

    a. What does the training consist of?

    b. Does it cover all types of collections?

    c. Is a refresher course offered periodically?

2. Does the institution have rules governing the use of research materials, including handling (e.g., only pencils may be used, no food and drink in the research rooms), and are these stated for every user? Are they enforced?

    a. Are instructions given verbally to users, are there written instructions, or both?

    b. Do handling instructions cover all types of collections?

3. Who is allowed to photocopy historical collection materials? Staff, patrons, or both? What may be photocopied? Are there materials that cannot be photocopied due to their fragility and the danger of damaging them? How are these materials identified?

4. Is an edge copier available?

5. Are original photographic prints and negatives handled only when absolutely necessary, and are gloves used?

6. What type of workspace is available for staff and researchers? Is there sufficient flat space within the storage area to remove and set down large boxes or map folders? Is there sufficient table space for users to work with large folders and boxes?

7. How are historical books processed? Are labels or other adhesives used to attach call numbers?

8. When is the last time the collections and storage furniture were cleaned? How was this done, who did it, and how were they trained?

## *B. Storage and Condition of Specific Collections*

This part of the survey assesses the institution's storage practices for specific media and identifies the damage most characteristic of an institution's collections. Acid deterioration, fading, and embrittlement point to climate and light problems. Torn or folded documents, damaged hinges and end caps, rust stains from paper clips, and acid migration from poor-quality paper point to a need for improved storage and handling techniques.

The surveyor is looking for existing damage or poor storage practices that are common in the collections (e.g. rubber bands holding covers together, poorly supported books, overstuffed file folders, acidic inserts in books or files). Although this examination may locate individual objects that need repair or other treatment, its primary goal is to identify general needs and areas of the collection in need of remedial actions. These might include instituting a program of phase boxing, enclosing photographs, replacing manila folders with archival-quality folders and boxes, photocopying news clippings, or microfilming brittle books.

This section does not provide an object-by-object evaluation. If important individual objects requiring conservation treatment are identified, a conservator can be asked to evaluate the need for emergency care. A conservator also can conduct a collection condition survey that will examine a quantity of artifacts, making recommendations for treatment and estimating associated costs.

With experience, preservation professionals have identified the storage furniture, enclosures, and supports that provide the best protection for each category of collections (e.g., books, pamphlets, maps, photographs, documents). A surveyor unfamiliar with the basic principles for protective storage of materials common to paper-based historical collections should read the following sections carefully and apply these principles in evaluating the condition of collections.

This section can be approached in two different ways, depending on the situation and the collections. At the end of this section are forms for each different type of collection. These forms can be used to evaluate groups of similar materials (e.g., a rare book collection, a collection of scrapbooks, a group of bound newspapers, a photograph collection). In addition, a form is provided for mixed collections (e.g., an archival collection that contains documents, news clippings, photographs, perhaps a scrapbook or two). This will allow the surveyor to consider mixed collections as a whole when necessary. The surveyor should determine which forms will be most helpful and make copies as appropriate. Note that if certain types of materials (e.g., newspapers or audiovisual materials) are not included in the collection, those forms will not be needed.

### 1. Books

<u>Storage</u>

Do not allow books to lean to the side, since this causes unnecessary strain on covers and joints. Shelve them upright, standing on their tails, supported by each other and by bookends. Books that are too tall for their shelf are best shelved horizontally. If this is not practical, shelve them spine down. A buffered flag can be used to make label information readily visible. Books should never be shelved with the spine up, since the weight of the pages will eventually pull the text block out of the cover. Books of enduring value should be shelved by size. Very small volumes do not provide the support that much larger bindings need and can be crushed by the weight of larger books.

The non-knifing variety of bookend, which has a lip, is preferred to the knifing variety, which allows books to be jammed onto its sharp edge. A brick covered with book cloth fastened with PVA adhesive can be a good book support. Another alternative is a piece of acid-free foam-core covered with book cloth and slipped over the upright of a knifing bookend to shield the metal edge.

Heavy, oversized volumes should be stored flat, not vertically, to give them the overall support they require. They should be stacked no more than two or three high to facilitate safe handling. This may require the insertion of additional shelves at narrow intervals. Shelves must be wide enough to support oversized volumes completely, and books must not be allowed to protrude into aisles, where they are subject to bumps and abrasion.

**TIPS FOR TAKING ACTION**

- Replace damaging bookends
- Straighten shelves so that books are not leaning
- Insure that oversize volumes are stored flat or spine down (not spine up)
- Begin a boxing program for valuable books that are damaged but not frequently used

Boxing

Boxes constructed of archival quality materials can be custom made to fit a book's measurements. They provide support for the volume and protection from dirt, dust, light, and mechanical damage. Volumes with artifactual value, where the fragile binding is to be retained in its present condition, should be boxed. Volumes that have low value or are rarely used and do not warrant treatment for repair of the binding may also be boxed. Boxes can be made in-house or contracted out. Drop spine boxes provide the most protection. Phase boxes are not as rigid or impervious to light or dust, but they are an acceptable cost-efficient alternative.

For information on making boxes in-house, see “Card Stock Enclosures for Small Books” in *PLAM3*, which gives instructions for making enclosures for lightweight books and pamphlets. Ready-made rare book boxes can be purchased from conservation suppliers, but if they are to provide proper protection they must fit the books closely and the weight of the board or card stock must be appropriate for the size of the books. For information on contracting out for box making, see “Protecting Books with Custom-Fitted Boxes” in *PLAM3*, which lists vendors that provide this service and shows how to measure for custom book boxes. Many vendors make both drop-spine and phase boxes. Deteriorated books of great value should have custom-made drop-spine boxes that fit the book exactly.

Two alternatives to boxing are cheaper, but do not provide as much protection. Deteriorated books that are used very infrequently can be wrapped in buffered paper or fitted with polyester book jackets (see "Polyester Film Book Jacket," in *PLAM3*). Both of these strategies will prevent dispersion of the "dust" from red rot and provide some protection from dust and abrasion. Among the disadvantages: a polyester book jacket does not cover the book completely, the paper and polyester film do not provide as much support as box board, and it can be difficult to replace a paper wrapping properly if it is removed for use.

If detached covers must be tied onto books as a temporary protection, ties should be undyed cotton or linen tape, or undyed polyester ribbon. Any knots should be at the top or foredge of the text block to prevent damage from pressure against other books. Never hold damaged bindings together with rubber bands, which will deteriorate to cause further damage.

## 2. Pamphlets

Pamphlets and small booklets can be stored in specially made enclosures, in folders and boxes, or in hanging folders in file cabinets. Pamphlets of the same cover size can be stored in drop-spine or phase

boxes. Pamphlets that differ in size may be stored according to guidelines given for manuscripts and documents. Pamphlets more than about 1/4" thick should be stored spine down in individual folders. Pamphlets of very different size should not be stored in the same folder.

If individual pamphlets must be shelved between books, they should be individually boxed. Groups of pamphlets shelved between books can be boxed together if the guidelines above are followed. If pamphlet binders are used, they must be of preservation quality throughout. They should never be glued directly to pamphlets. Where stitching is used to join pamphlet and binder, it should be done through the fold or in original fastener holes where possible.

## 3. Documents and Manuscripts

Storage

Documents should be stored in low-lignin, buffered file folders; no more than approximately fifteen sheets should be placed in each folder. The folders should then be placed in archival-quality document storage boxes as close to the size of the folders as possible. All folders in each box should be the same size. Boxes should be full enough to prevent slumping of the contents. Partially full boxes can be filled with spacer boards available from conservation suppliers. Do not stuff boxes. This can cause damage when sheets are removed and refiled. See "Archival Enclosures" above (section IV.A.2) for general information on enclosures.

**TIPS FOR TAKING ACTION**

- Switch to archival quality pamphlet binders
- Use spacer boards to prevent slumping of folders inside archival boxes
- Rehouse collections that are slumping in file cabinets into archival folders inside hanging files

An alternative to boxed storage is a standard baked enamel file cabinet equipped with hanging racks and hanging folders. Archival-quality hanging folders are available, but the conventional hanging folders are acceptable as long as the enclosures within them are buffered.

Store objects of the same size and category together whenever possible. Archivists habitually organize collections by subject group, but objects of differing bulk and weight can cause damage due to uneven pressures in a drawer or box. It is not advisable to store single sheets in the same box with books or pamphlets unless there are separate enclosures and supports for each category of material. Generally speaking, heavy objects should be stored separately from lighter objects, as should bulky objects.

Parchment and vellum are highly susceptible to damage from fluctuations in relative humidity. They require stringent humidity controls. Such documents should be enclosed for additional protection. Suitable enclosures include encapsulation, folders, matting and framing, and boxing, or a combination of these techniques.

## 4. Photographs and Negatives

Prints and negatives are best stored in individual enclosures. This reduces damage to the photograph by giving it physical support and protection. Acceptable enclosures can be made of paper or plastic. Paper enclosures are opaque, making it necessary to remove the object from the enclosure for examination; plastic enclosures allow a researcher to view the image without handling it, reducing the possibility of scratching or abrasion.

Plastic materials suitable for photographic storage are polyester (either DuPont Mylar D or ICI Melinex #516), polypropylene, and polyethylene. The plastic should be uncoated and free of plasticizers or other additives. Polyester is the most stable of the three and the most expensive. Enclosures made from polyvinyl chloride (PVC) are unstable and damaging, and they should not be used for long-term storage of photographs. Cellulose acetate enclosures are also not recommended. Plastic enclosures come in a variety of shapes and sizes, and usually have heat-sealed seams.

When using paper enclosures for photographic storage, conservators previously recommended that photographs be housed in low-lignin neutral paper enclosures, rather than in alkaline enclosures, since it was thought that color images, cyanotypes, and albumen prints would be damaged by the alkalinity in buffered enclosures. However, recent research indicates that this is not the case. Rather than choosing enclosures according their pH level, paper enclosures should be chosen based on whether they pass the Photographic Activity Test (PAT). This test indicates whether the enclosures contain harmful chemicals that will cause image fading or staining. If envelopes with adhesive seams are used, the adhesive must be stable, pH neutral, and it must not react with silver; the seams should be on the sides or the bottom; and the emulsion of the photograph should face away from the seams. See "Storage Enclosures for Photographic Materials" in *PLAM3* for more information on enclosures.

Once they have been individually enclosed in paper or plastic, photographs must be placed in archival quality boxes. Where possible, items of similar size should be stored together; the mixing of different sizes can cause abrasion and breakage and can increase the risk of misplacing smaller items. Horizontal storage of photographs is usually preferable to vertical storage, since it provides overall support and avoids mechanical damage such as bending or slumping. The photographs should be stored flat in drop front boxes of archival quality housed on shelves or in metal cabinets. All enclosures within a box should be the same size, fitting the size of the box. Neutral or buffered file folders may be used to help organize photographs within the box.

Vertical storage can be successfully used if necessary. Small photographs of uniform size can be individually enclosed and placed vertically in boxes the same size as the photographs. Boxes of various sizes and types are available from conservation suppliers. For vertical storage in a filing cabinet, protected photographs should be placed in archival folders that are themselves placed in hanging file folders. Several photographs may be stored in each folder, and several folders may be placed in each hanging file. Lightly filled hanging file folders will prevent photographs from sliding down under each other in the drawer and will facilitate their handling. Alternatively, place folders in archival document boxes, but take care that the folders do not slump and the photographs are well supported.

**TIPS FOR TAKING ACTION**

- Inventory existing photograph albums, noting their condition and whether or not the photographs could be removed without causing damage, as well as identifying any albums that must be retained "as is" due to their value as artifacts
- Sort loose photographs by size and purchase appropriate enclosures and boxes
- Identify any nitrate and/or acetate negatives in the collection. Rehouse and segregate them from each other, and from other collections

Give special care to the storage of oversized photographic prints mounted on cardboard. This cardboard is often acidic, causing the mounts to become brittle with age. Embrittlement of the support can endanger the image itself if the cardboard breaks in storage or during handling. Such prints must be carefully stored; they should be placed in individual folders in archival quality boxes of appropriate size and stored flat on shelves. They require careful handling.

Cellulose nitrate and cellulose acetate film negatives can pose particular preservation problems. Unlike modern polyester film, they are both unstable, and their deterioration is autocatalytic, meaning that the products produced as they deteriorate in turn cause further deterioration. Nitrate film is also very flammable and poses a serious fire hazard, particularly once it has begun to deteriorate. However, the hazard is less for sheet film than for roll film such as motion pictures.

To provide proper storage and treatment, it is essential to properly identify the film bases in the collection. "Guidelines for Care and Identification of Film-Base Photographic Materials," by Monique Fischer and Andrew Robb (Art Conservation Program, University of Delaware, Winterthur Museum, 1993), at Conservation Online (http://palimpsest.stanford.edu/byauth/fischer/fischer1.html), can assist in identifying cellulose nitrate and cellulose acetate film-based negatives.

Each type of film base should be stored separately, in a well-ventilated area, apart from other types of collections. This is particularly important for nitrate negatives. Nitrate and acetate negatives should be stored in paper envelopes that pass the Photo Activity Test. Both nitrate and acetate negatives should be monitored on a regular basis so that any deterioration can be identified early. If deterioration is discovered, the deteriorating materials should be isolated from those that are still in good condition. Nitrate and acetate negatives should be duplicated onto polyester film whenever possible, as this will provide a stable copy. See "Reformatting Photographs and Audiovisual Materials" (section IV.D.3 below) and "Duplication of Historical Negatives" in *PLAM3* for information on duplication.

## 5. Oversized or Framed materials

Prints, maps, broadsides, and other oversized objects are best stored flat in map drawers or in large covered boxes of preservation quality available from conservation suppliers. It is acceptable to store documents legal-sized or smaller in upright archival boxes, but anything larger than 15" x 9" should be stored flat. Sheets smaller than 30" x 40" will fit into archival boxes, which come in various sizes and are cheaper than map cases. Objects should be protected in neutral or buffered folders cut to fit the size of the drawer or box, since smaller folders tend to shift position as the drawers open and close and get jammed at the back of the drawers. Several objects may be placed in a folder. Items of special value should be interleaved with buffered or neutral tissue paper. It was traditionally recommended that some items (such as blueprints) should not be stored in alkaline-buffered folders because they are sensitive to alkaline materials and might be damaged by contact with the folders. However, recent research has indicated that as long as the relative humidity in the storage area is kept moderate (between 30% and 55%), this is not necessary. If desired, however, lignin-free, neutral folders can be used for these materials.

If map drawers or boxes are not available, or if objects are too large to fit in map drawers, oversize objects can be rolled on tubes, as long as the paper is not too brittle to withstand unrolling. If rolling the object on a tube, use a tube longer than the rolled object and at least 4" in diameter (larger diameters are preferred). If the tube is not archival quality, it must be wrapped in neutral or buffered paper. Carefully roll the object onto the tube, and wrap the assembly with neutral or buffered paper to protect it from abrasion. This assembly can then be stored inside a larger tube for added protection. Tubes should be stored horizontally. Alternatively, oversize objects can be rolled within a polyester folder. See "Storage Solutions for Oversized Paper Artifacts" in *PLAM3* for instructions for making a rolled polyester folder.

Any prints, drawings or other objects that have been matted or backed with acidic materials or wood should be removed from those mounts. They may be reframed in their original frames using museum-quality materials. These objects may also be safely stored unframed, matted or unmatted, in folders inside boxes or drawers, as described above. Frames should not use eye screws or other

protruding hardware for hanging. They can cause damage to other frames or glazing. These should be replaced with D-rings on brackets, available from framers. See "Storage Solutions for Oversized Paper Artifacts," "Matting and Framing for Art and Artifacts on Paper," and "How to Do Your Own Matting and Hinging," all in *PLAM3*, for more information.

## 6. Newsprint

Because groundwood papers were commercially produced after about 1840, newsprint after that date may be highly acidic. Long-term preservation of this paper is difficult at best. It is possible to treat newsprint by deacidification to retard its deterioration, but this treatment is usually economically impractical. Deacidification after paper has become yellow and brittle will not make the paper white and flexible again. Microfilming is usually the preservation option of choice for newspaper collections.

Most news clippings are important because of their information, not for the value of the clippings themselves. For this reason, photocopying or microfilming are considered the most practical preservation options. All photocopying should be done on archival quality paper; originals can then be deaccessioned at the discretion of the librarian or curator. News clippings with photographs that do not photocopy well may be physically separated from other papers in a folder by placing them inside an enclosure made of polyester. News clippings to be retained in their original form should be deacidified and stored in buffered enclosures.

## 7. Scrapbooks and Ephemera

Many historical collections include scrapbooks and ephemera (e.g., trade cards, valentines, patterns, paper dolls). These objects pose challenging preservation problems because they often contain a variety of components and media. They may have raised surfaces or three-dimensional decoration. They are frequently unique, fragile, damaged, or of significant associational value. They should never be interfiled with other categories of library and archives material because significant chemical and mechanical damage can result from the different sizes, shapes, weights, adhesives, and media.

Most scrapbooks and ephemera can be handled according to general guidelines for similar artifacts. Objects that have informational value alone (for instance, some clippings scrapbooks) can be photocopied onto archival-quality paper and boxed, bound, or foldered. The originals can be retired from use, and copies made available to researchers. Scrapbooks that have enduring value in their original form should be individually boxed in custom-fitted boxes. Valuable scrapbooks may have a high priority for evaluation by a conservator. See "Preservation of Scrapbooks and Albums" on the Library of Congress web site at http://lcweb.loc.gov/preserv/care/scrapbk.html for more information.

Other artifacts should be grouped by size and type (e.g., postcards, printed material, documents), enclosed to protect them from chemical migration and mechanical damage, and stored to support the structure of the artifact (encapsulated, boxed, stored flat or in hanging files). Some vendors of archival supplies offer custom sized storage boxes and sleeves for common ephemera such as postcards and stereo views. Some can produce custom-sized boxes in quantity to meet special needs.

## 8. Audiovisual Materials

In addition to photographs and negatives, even small historical collections sometimes include other audiovisual collections. These types of collections present unique challenges for preservation.

Unfortunately, magnetic media such as audio and video recordings have inherent chemical instabilities. The binders used to couple magnetic media to their film base break down quickly in the presence of moisture. Audio and video recordings are also "machine-dependent;" that is, they must be placed in a machine to be heard or viewed. This means that the proper equipment must be available and in good working order. In addition, it means that wear and tear on the materials is inevitable. The best estimates of the lifespan of magnetic media do not exceed 30 years, and the estimate is considerably less if the materials are played routinely. Refreshment, or copying, of the recordings can extend the lifespan of the information. In many cases, however, format obsolescence may become a problem even before physical deterioration occurs. A large number of recording formats are found in audiovisual collections (some of them already obsolete), and new formats continue to be developed. Either recording and playback systems need to be maintained indefinitely for all of them (not practical or even possible in most cases), or the information must be migrated to new formats periodically (see "Reformatting Photographs and Audiovisual Materials, section IV.D.3 below).

**TIPS FOR TAKING ACTION**

- Photocopy news clippings onto archival quality paper
- Store valuable scrapbooks flat in archival boxes (tissue can be used to keep the volume from sliding within the box if the exact size box cannot be used)
- Store audiovisual collections in the coolest and driest environment possible

Environmental control is crucial for audiovisual and any other magnetic media collections. Maximum temperature of 65°F to 70°F and stable relative humidity of about 30% are recommended. Since the hydrolysis that causes deterioration of magnetic media depends on the level of moisture, low humidity is especially important for magnetic media. Cold storage can significantly increase the life expectancy of color photographs and collections on cellulose acetate or nitrate base, but for small institutions this is usually impractical. In general, audiovisual materials should be stored in an area with the coolest possible temperatures and the most tightly controlled conditions. As with paper, fluctuations in climate should be avoided as much as possible. Archival enclosures are available from conservation suppliers and should be used for all audiovisual collections with long-term value.

Careful handling and use are also extremely important, as audiovisual media are vulnerable to the smallest amount of dirt and dust. Cotton gloves must be used for handling, and the storage and use areas must be kept as dust free as possible. The provision of service copies is an excellent strategy for reducing handling of originals.

Some historical collections contain motion pictures. Many motion pictures are on cellulose acetate or nitrate bases, which pose significant problems. It is extremely dangerous to retain original motion picture films on cellulose nitrate base, since they are very flammable. Cellulose acetate base films are not a fire hazard, but they deteriorate over time. Acetate films should be stored in suitable plastic, rather than metal, containers, as the plastic allows the acetic acid vapor produced as a byproduct of deterioration to dissipate. Acetate base and color films greatly benefit from storage at cold temperatures, but again, this is generally not practical for small institutions with only a few films. The best solution may be to have service copies made onto videotape (duplication onto film is very expensive) and find a commercial facility or larger institution to provide cold storage for the originals.

Some collections may contain a variety of older sound recordings (ranging from cylinder recordings to vinyl LPs). In general, these older materials are not as vulnerable, provided they are stored and handled properly. Like other media, they require careful handling and a stable moderate environment. Disks should be stored vertically, and special shelving may be required due to the weight of these materials. See the *Resources* section of this guide for references to additional information.

## *Worksheet For Mixed Collections*

Name of Collection: _____ Location: _____

1. Briefly describe the environmental conditions where the collection is stored:

2. What types of objects are in the collection (check all that apply, and indicate amounts and general condition for each category)?

   ____Rare books

   ____Historical reference books

   ____Oversize books

   ____Record/ledger books

   ____Scrapbooks

   ____Pamphlets

   ____Manuscripts

   ____Documents

   ____Photocopied documents

   ____Photographs

   ____Negatives

   ____Newspapers

   ____Maps

   ____Architectural drawings

   ____Art on paper

   ____Other:

3. What type of furniture is the collection stored in/on?

4. Are the books/boxes/objects in the collection generally well supported? Are the materials crowded on the shelves, are boxes filled too full?

5. What types of enclosures are in the collection (e.g., type of boxes, neutral/buffered enclosures, manila envelopes, manila folders)?

6. Are damaging fasteners (e.g., rubber bands, paperclips) used in the collection? Where?

7. What is the general condition of the collection? Indicate any specific objects that appear to be particularly important and fragile/damaged)

____Wear and tear

____Soil and surface dirt

____Water stains

____Acid damage (e.g., yellowing, browning, embrittlement, deteriorated ink)

____Light damage (e.g., fading, discoloration, embrittlement)

____Damage to book covers or bindings (e.g., red rot, damaged spines, abraded edges or corners, detached boards, loose or broken hinges, damaged stitching or other attachment structure, deteriorated adhesive)

____Evidence of mold, rodent, or insect damage

____Evidence of poor handling or vandalism (e.g., torn endcaps, torn or missing pages, graffiti,)

____Other damage:

8. How frequently is this collection used? Will it be used more frequently in future?

    ____Heavy (frequent exhibit, research, or education use)
    ____Medium (occasional exhibit or research use)
    ____Low (permanent storage, handled infrequently)

9. Will objects or areas of the collection be severely damaged by further handling? Should these be removed from public use or reformatted for research use?

10. Recommendations for preservation:

    ____Move collection or modify environment
    ____Rehouse into archival enclosures
    ____Phase box/book box
    ____Reformat
    ____Conservator evaluation needed
    ____Other:

## *Worksheets For Specific Formats: Bound Volumes and Pamphlets*

Storage of bound volumes

1. Describe the types of historical books held by the institution:

    a. Does the historical collection include printed books that are considered rare, special, or valuable (e.g., associational value, value as artifacts, monetary value)?

    b. Does the historical collection contain printed volumes that are valuable for the information they contain, but not as artifacts (these might include regional history or genealogy volumes available elsewhere)?

    c. Does the historical collection include bound manuscript volumes (e.g., ledgers, account books, diaries)?

2. Are book supports (bookends) systematically used, and are books held upright on shelves? What types of bookends are used?

3. Are books of special value shelved by size to provide support?

4. If the collection contains oversized books, are they shelved horizontally in stacks of no more than 2 or 3 volumes? If they are shelved vertically, are they spine up or spine down?

5. Do any books extend beyond the shelf that holds them?

6. Is there a program to create custom-fit boxes for damaged books? What types of boxes are made and who makes them?

7. Do books contain news clippings, place markers, or other potentially damaging inserts?

8. Are damaged bindings held together by rubber bands or other potentially damaging techniques?

9. What bookplates, pockets, labels, identifying marks, or circulation controls are in use? For which categories of the book collection? Are the labels and other materials stable?

Storage of pamphlets

1. Describe the types of pamphlets held by the institution.

2. How are the pamphlets stored (e.g., pamphlet binders, four-flap enclosures, folders)? Are they shelved with books? Stored in boxes?

3. If they are stored in pamphlet binders, are the binders archival-quality? How are the pamphlets attached to the binders?

Condition

1. What is the general condition of pamphlets and book pages? Damage might include wear and tear, soil and surface dirt, water stains, yellowing, embrittlement, deteriorated ink, evidence of mold or insects, or evidence of poor handling. Indicate any specific objects that appear to be particularly important, fragile and/or damaged.

2. Is there damage to book covers or bindings (e.g., red rot, damaged spines, abraded edges or corners, detached boards, loose or broken hinges, damaged stitching or other attachment structure, deteriorated adhesive)?

3. Is there damage to pamphlets from poor quality binders used in the past (e.g., adhesives, acidic covers)?

4. What is the current and projected future use of these materials? Would further handling damage any of them? Should these be removed from public use or reformatted for research?

## *Worksheets for Specific Formats: Documents and Manuscripts*

Provide a general description of the types of documents and manuscripts held by the institution.

Storage

1. Are documents stored in limited quantities in archival-quality folders and in hanging files or archival-quality boxes?

2. Have all fasteners and insertions been removed from archival and manuscript collections?

3. Are folded documents filed or boxed? Can they be unfolded without damage?

4. If the collection contains parchment or vellum documents (or bindings), are they adequately protected from humidity changes?

Condition

1. What is the general condition of documents and manuscripts? Damage might include wear and tear, soil and surface dirt, water stains, yellowing, embrittlement, deteriorated ink, evidence of mold or insects, or evidence of poor handling. Indicate any specific items that appear to be particularly important, fragile and/or damaged.

2. What is the current and projected future use of these materials? Would further handling damage any of these materials? Should these be removed from public use or reformatted for research?

## *Worksheets for Specific Formats: Photographs and Negatives*

Provide a general description of the types of photographs and negatives held by the institution.

Storage

1. Are prints and negatives individually enclosed, and filed or boxed in archival-quality enclosures?

2. Are photographs in different formats and sizes (e.g., glass plate negatives, stereo views, mounted prints, cased photographs) grouped and stored by size and format?

3. Are there any nitrate or early safety film negatives in the collection? Are these negatives stored in paper enclosures that pass the Photographic Activity Test, and are they isolated from the rest of the collections? Have arrangements been made to duplicate and discard nitrate film? Early safety film?

4. Have photocopies or duplicate prints been made for first access to photograph collections, so originals need not be handled?

5. Are photographs protected from light and climate extremes?

Condition

1. What is the general condition of photographic prints? Damage might include surface dirt or stains, yellowing or fading, evidence of mold or insect damage, abrasion of the emulsion, loss of part of the image, embrittlement of prints and/or mounting boards, curling of prints, and tarnishing or discoloration of encased photographs. Indicate any specific items that appear to be particularly important, fragile and/or damaged.

2. Is there any evidence of deterioration of nitrate negatives or of early safety film (cellulose acetate) negatives (bubbling of emulsion, discoloration, odor)? If the collection includes glass plate negatives, are any cracked or dirty?

3. What is the current and projected future use of these materials? Would further handling damage any of them? Should these be removed from public use or reformatted for research?

## *Worksheets for Specific Formats: Oversized and Framed Materials*

Provide a general description of the types of oversized and framed materials held by the institution (e.g., maps, broadsides, architectural drawings, framed prints).

Storage

1. Are oversized objects stored flat? Are there map cases or other large-scale storage units for necessary protection and support?

2. Are archival-quality folders, tissue, and other materials used for oversized objects?

3. Do aisles and work surfaces provide enough room to protect oversized objects from abraded edges and accidental folding?

4. If oversized objects must be rolled, are large-diameter tubes used? Are the tubes neutral or covered with neutral or buffered paper, and are objects rolled around the outside of the tube? Is the assembly wrapped with neutral or buffered paper?

5. Are framed objects matted or backed with acidic materials? Are any frames backed with wood?

6. How are framed objects stored?

Condition

1. What is the general condition of framed items? Damage might include: yellowing, darkening, or fading of the paper support where it has been exposed to light; fading or alteration of colors in artwork; stains from adhesive or tape used to attach the item; mat burn (discoloration of the object at the edge of the mat); discoloration of the object from acidic backing board or wooden slats used in the frame; soil and surface dirt; water stains or cockling of paper; foxing spots; or evidence of mold or insects. Indicate any specific items that appear to be particularly important, fragile and/or damaged.

2. What is the general condition of oversized items? Damage might include soil and surface dirt, water stains, yellowing, rolled items that are too brittle to unroll easily, torn edges, deteriorated ink, evidence of mold or insects, or evidence of poor handling.

3. What is the current and projected future use of these materials? Would further handling damage any of them? Should these be removed from public use or reformatted for research?

## *Worksheets for Specific Collections: Newsprint*

Provide a general description of the types of newsprint held by the institution (e.g., bound newspapers, loose issues of newspapers, news clippings).

Storage

1. Are news clippings photocopied onto permanent paper or otherwise reproduced for preservation purposes?

2. If original news clippings are retained, are they stored according to the principles for documents and in buffered enclosures? Are they separated from higher-quality paper?

3. Have bound newspapers been reformatted onto microfilm? Is it necessary to retain the originals?

4. If original bound newspapers must be retained, are they stored flat according to the guidelines for oversized bound volumes?

5. Are original loose newspaper issues stored in buffered folders and boxes? Is it necessary to retain the originals or could they be reformatted?

Condition

1. What is the general condition of newsprint? Damage might include yellowing and embrittlement of clippings or bound newspapers, soil and surface dirt, water stains, damage to the bindings of bound newspapers, evidence of mold or insects, or evidence of poor handling. Indicate any specific items that appear to be particularly important, fragile and/or damaged.

2. What is the current and projected future use of these materials? Would further handling damage any of them? Should these be removed from public use or reformatted for research?

## *Worksheets for Specific Collections: Scrapbooks and Ephemera*

Provide a general description of the types of scrapbooks and ephemera held by the institution (e.g., clipping scrapbooks, mixed media scrapbooks, postcards). Are some scrapbooks valuable only for the information within them? Do others have artifactual value?

Storage

1. Are scrapbooks individually boxed and stored flat? Are original scrapbooks accessible to patrons? Are copies available for research use?

2. Are ephemeral materials sorted and stored by size and type? Are they housed in individual enclosures inside appropriately sized boxes? If not, are these objects of sufficient value to warrant reorganization by size or category?

Condition

1. What is the general condition of scrapbooks? Damage might include acidic and brittle pages, strained or damaged bindings, unstable plastic sleeves covering pages, stains from tape or adhesive, deteriorated or damaged items within the scrapbook(s) (e.g., news clippings, photographs, documents, and other artifacts), water stains, evidence of mold or insects, or evidence of poor handling. Indicate any specific items that appear to be particularly important, fragile and/or damaged.

2. What is the general condition of ephemera? Damage might include yellowing, embrittlement, soil and surface dirt, water stains, evidence of mold or insects, or evidence of poor handling. Indicate any specific items that appear to be particularly important, fragile and/or damaged.

3. What is the current and projected future use of these materials? Would further handling damage any of them? Are there vulnerable materials that should be removed from public use or reformatted for research?

## *Worksheets for Specific Collections: Audiovisual Materials*

Provide a general description of the types of audiovisual materials held by the institution (e.g., audiotapes, videotapes, motion pictures, vinyl LPs).

Storage and Use

1. What are the environmental conditions in the area(s) where audiovisual collections are stored?

2. What types of storage enclosures are used for audiovisual materials? Are motion pictures on acetate base stored in archival plastic containers? Are vinyl LPs stored upright?

3. Does the collection include any motion picture film on nitrate base?

4. Are copies of audio and video recordings available for research? Are originals handled only by staff? Are cotton gloves worn when handling audiovisual collections?

5. Is playback equipment in good condition and maintained routinely?

Condition

1. What is the general condition of these materials? For magnetic media, is there evidence of sticking due to binder hydrolysis, or distortion of tape packs? For motion picture film, is there evidence of vinegar syndrome (e.g., a vinegar smell)? Indicate any specific items that appear to be particularly important, fragile, and/or damaged.

2. What is the current and projected future use of these materials? Are there vulnerable materials that should be removed from public use or reformatted for research?

## *C. Exhibition of Collections*

The need to exhibit books and paper artifacts complicates the goal of preservation. The display environment is often more difficult to control than the storage environment. The materials displayed have, almost by definition, special value; and preservation is often secondary to an exhibit designer. At the very least, exhibited objects are exposed to higher light levels than they would normally experience in storage.

Valuable paper collections should never be exhibited permanently, since this can cause irreversible fading and accelerate acidic deterioration. Whenever possible, exhibit duplicates or facsimiles of photographs and other paper-based materials. If originals must be exhibited, light levels should be no higher than 50 lux, and exhibit length should be limited to 2-3 months. Climate conditions inside exhibit cases should be monitored to ensure that they are not damaging. A min/max thermohygrometer will give a general indication of conditions.

**TIPS FOR TAKING ACTION**

- Remove original paper-based materials from permanent exhibit
- Make copies of original materials to use for exhibit purposes
- Place a min/max thermohygrometer in the exhibit case to evaluate environmental conditions

Exhibit cases should be built of stable, pollutant-free materials and coatings. Mounts, supports, and other exhibit materials should be made from inert materials like Plexiglas and polyester, or from neutral paper. Exhibit cases should not contain lights, since these cause significant changes in temperature and relative humidity within the case. Fiber-optic lighting is acceptable, since it does not produce heat.

Documents should be completely supported by mats and museum-quality framing and hinging techniques, or by polyester slings, bands, or coversheets. See "Matting and Framing for Art and Artifacts on Paper" and "How to Do Your Own Matting and Hinging" in *PLAM3* for instructions for matting, hinging, and framing. Additional sources are Ann Clapp's *Curatorial Care of Works of Art on Paper* and Margaret Holben Ellis's *The Care of Prints and Drawings*, both referenced in the *Resources* section.

Books must be well supported to protect their bindings from strain. Supports can be made from neutral mat board or Plexiglas. A stand or mount should support the entire cover(s) of a book as well as the spine. Reasonably good Plexiglas supports are available from conservation suppliers. Most books, and all oversized books, should be exhibited at no more than a gentle angle. If the book will not remain open naturally, a polyester band closed with 3M double-sided tape no. 415 can be used to hold the book open. Books can be structurally damaged by long-term exhibition in an open position, so exhibit periods must be limited.

The standard for exhibition of paper-based collections—ANSI/NISO Z39.79-2001 *Environmental Conditions for Exhibiting Library and Archival Materials*—provides guidelines for light; temperature; relative humidity; pollutants; exhibit case materials, design, and construction; and techniques for display. Appendices provide lists of recommended materials for constructing exhibit cases or supports. A free .pdf version of the standard can be downloaded from NISO's web site, at http://www.niso.org. Also see "Protecting Book and Paper Collections During Exhibition" in *PLAM3*.

## *Exhibition Worksheet*

(use one copy for each exhibition area)

1. Does the institution exhibit books, documents, or other artifacts? What types of materials are exhibited, and how often are exhibits changed or objects rotated? Are any artifacts in the collection permanently displayed?

2. Describe the exhibit cases. What are they made of? Do they have interior lighting? Is there air circulation? Is the climate within the cases monitored?

3. What are the overall light levels in exhibit spaces? Are any exhibit areas lit by windows or other natural light? Are shades and/or ultraviolet filters used to reduce light exposure?

4. Does the institution have written guidelines for what may or may not be exhibited and for how exhibits should be prepared?

5. Who has responsibility for preparing materials for exhibit? Is this person knowledgeable about the preservation requirements?

6. Are facsimiles or duplicates exhibited whenever possible?

7. Are exhibited items fully and safely supported with stable materials?

8. What security precautions are taken for exhibited objects?

## *D. Reformatting*

When materials have informational value only, or when their value and condition makes it necessary to limit handling, a number of preservation reformatting strategies are available. Four strategies are addressed below, to provide guidance for using the worksheets that follow.

### 1. Preservation Microfilming

Despite increasing interest in new technologies, preservation microfilming remains an established and valued strategy. Properly produced and stored preservation microfilm has a lifespan of about 500 years. Microfilm is an important preservation strategy for material that has information value rather than artifact value, or for material that has such great artifact value and/or is so fragile that it should not be routinely handled by researchers.

**TIPS FOR TAKING ACTION**

- Rehouse existing preservation microfilm into archival enclosures
- Evaluate collections to identify those that merit preservation filming
- Acquire facsimile reproductions of deteriorated historical volumes

In most cases, preservation microfilming is contracted out. An institution should develop standards for the production of its preservation microfilm and include them in each contract for services. These should conform to the formal and de facto standards used within the library and archival communities. If possible, visit the filmer to make sure housekeeping and security meet the needs of the collections. This is especially important to prevent damage to original materials that will be returned to the collection. It is also important to house microfilm in archival enclosures, provide off site storage for master microfilms, maintain microfilm readers regularly, and insist that researchers use the microfilm instead of the original materials. "Microfilm and Microfiche" in *PLAM3* provides an overview of film types, film production standards, and storage requirements.

### 2. Preservation Photocopying

In-house photocopying onto permanent durable paper is an excellent way to preserve acidic paper materials such as news clippings. Paper used for preservation photocopying must comply with ANSI/NISO Z39.48 1992(R1997) *Permanence of Paper for Publications and Documents in Libraries and Archives*, and the proper copying machinery and methods must be used. A free .pdf copy of this standard can be downloaded from the NISO web site at http://www.niso.org. A list of papers that meet the standard has been compiled by Abbey Publications; an excerpt from *North American Permanent Papers, 3rd ed.*, edited by Ellen McCrady (Austin, TX: Abbey Publications, June 1998) is available at http://palimpsest.stanford.edu/byorg/abbey/napp/. A Library of Congress handout on the Web gives additional guidance on preservation photocopying (see "Preservation Photocopying," Library of Congress Preservation Directorate, revised 9/30/97; at http://www.loc.gov).

For damaged, brittle, and out-of-print local history books that are used frequently, commercial preservation photocopying—also called facsimile reproduction—can provide a use copy. This is not the best choice for a book that is valuable as an artifact, since the photocopying process can be damaging. However, it is a good option for books that are only valuable for their content. A number of facilities specialize in facsimile reproduction of brittle books on buffered paper. Some of them are listed in "Resources for Facsimile Replacement of Out-of-Print and Brittle Books" in *PLAM3*.

## 3. Reformatting Photographs and Audiovisual Materials

Reformatting onto appropriate media is an important preservation activity for photographs and other audiovisual materials. It can provide service copies for deteriorating materials, preservation-quality copies on a more stable medium, and/or preservation masters to replace deteriorating or obsolete formats.

For photographs, service copies cut down on handling of the originals. This is especially important for very deteriorated photographs. There are several options for producing service copies. Duplicate prints can be produced, a microfilm index of photographs can be created, or a database of digital images can be prepared. If photographic prints do not have negatives, it is important to produce a negative in case of loss or damage to the original. Conversely, prints should be made from negatives when an original print does not exist.

Still negatives on a nitrate or acetate base are subject to deterioration and should be duplicated onto a stable polyester base. Priority for duplication will depend on a number of factors. Research has shown that nitrate and acetate films deteriorate at approximately the same rate, so negatives of either type that already show signs of deterioration (e.g., fading, bubbling, warping, odor) should receive first priority. In particular, deterioration of cellulose acetate negatives can proceed very quickly, so frequent monitoring of their condition is essential. Nitrate negatives in good condition should also be duplicated, if possible, due to their flammability (although nitrate still negatives are not as dangerous as nitrate roll film). Priority for duplication may also be given to valuable negatives and negatives that are frequently used, whatever their type. See "Duplication of Historical Negatives" in *PLAM3* for information on specific types of negative duplication.

**TIPS FOR TAKING ACTION**

- Photocopy a much-used photograph collection, use the copies to provide access, and house the originals in archival enclosures
- Create preservation masters for deteriorating audio and/or video tapes
- Examine a still negative collection to identify any signs of deterioration; if deterioration is found, arrange for duplication of the negatives

Motion picture film on nitrate base is particularly flammable, and it must be kept in a fireproof vault, separate from other collections, and duplicated as soon as possible. Film that is on cellulose acetate base is not flammable but will deteriorate over time, giving off the characteristic vinegar smell and eventually exhibiting bubbling of the emulsion layer. Unfortunately, it is very expensive to copy motion picture film. If an institution holds only a few films on acetate base, it is probably best to have service copies made on videotape and to store the originals in cold storage off site.

For audio and video collections that are deteriorating rapidly or becoming obsolete, a preservation master should be created of each recording. The preservation master should be stored in a stable and moderate environment and restricted from use. One or more service copies should also be made for routine viewing. Preservation masters can be made either in digital or analog format, each of which has advantages and disadvantages. Digital information can be readily transmitted over computer networks and recopied indefinitely without losing information. However, digital systems are much more complex and become obsolete much more quickly than analog systems. They also by definition entail some loss of the original information, since digitization involves sampling the original information, not reproducing it exactly. It is generally recommended that sound recordings be reformatted via analog recording onto quarter-inch polyester standard-play tape with a ferric oxide coating. It is best to produce two copies: a preservation master that reproduces the original as accurately as possible, and at least one service copy, which can be altered to improve the sound quality if desired. Formats recently recommended for

preservation masters of videotape are Betacam SP and Digital Beta. See "Preservation of Information in Nonpaper Formats," in *Preservation: Issues and Planning* (Chicago: American Library Association, 2000) for more information.

It is best to have all copies made by an experienced outside vendor. It is also important to set priorities for reformatting, as it can be very expensive and there is rarely enough funding available to reformat everything. Both the importance of the material to the institution and the condition of the material should be considered in making reformatting decisions. Note that it may be difficult to assess the level of deterioration of some media, making it necessary to get the advice of a specialist through a collection survey.

## 4. Digital Imaging

Digitization (i.e., the conversion of analog data into machine-readable binary code) is increasingly used as a reformatting strategy for paper-based collections. Digital scanners and cameras are ubiquitous, and digitization initiatives—on varying scales and with varying goals—occur in cultural heritage institutions across the country and around the world. Despite this remarkable upsurge, serious questions remain about the use of digitization for preservation.

Of course, much of the digital data created today is not worthy of, or intended for, long-term preservation. Significant differences, especially regarding image quality and metadata, will likely exist between digital data planned for short-term use (e.g., digitized course materials on temporary electronic reserve) and digital objects deliberately created to have enduring quality and significance. Indeed, one of the key challenges of digital preservation is to create digital objects worthy of the effort and expense required to preserve them.

Many resources exist to help create high-quality digital objects, including the following:

Bishoff, Liz (et al). "A Framework of Guidance for Building Good Digital Collections." Institute of Museum and Library Services.
http://www.imls.gov/pubs/forumframework.htm

Western Trails, "Western States Digital Imaging Best Practices."
http://www.cdpheritage.org/westerntrails/wt_bpscanning.html

Digital Library Federation. "Digital Library Standards and Practices."
http://www.diglib.org/standards.htm#endorsed

Kenney, Anne R. and Oya Rieger. *Moving Theory into Practice: Digital Imaging for Libraries and Archives*. Mountain View, CA: Research Libraries Group, 2000.

Kenney, Anne R. and Oya Rieger. "Moving Theory into Practice: Digital Imaging Tutorial."
http://www.library.cornell.edu/preservation/tutorial/index.html

*The NINCH Guide to Good Practice in the Digital Representation and Management of Cultural Heritage Materials*. http://www.nyu.edu/its/humanities//ninchguide/index.html

Sitts, Maxine K. (editor). *Handbook for Digital Projects: A Management Tool for Preservation and Access.* Andover, MA: Northeast Document Conservation Center, 2000.
http://www.nedcc.org/digital/dighome.htm

Columbia University, Image Quality Working Group of ArchivesCom, a joint Libraries/AcIS**, "**Technical Recommendations for Digital Imaging Projects."
http://www.columbia.edu/acis/dl/imagespec2.html

Institutions engaged in digitization initiatives should seriously consider contracting out scanning to a qualified vendor. That vendor should have experience in working with historical materials and should have current equipment and the expertise to use it. If the work is contracted out, the institution must be able to communicate its requirements to the vendor clearly, e.g., specify the desired image quality and undertake appropriate quality control checks.

Creation of metadata is another critical component of digital preservation. Sometimes defined as "data about data," metadata describes, documents, and provides access to digital images. There are various types of metadata, including *descriptive*, *structural*, and *administrative*. A table explaining each of these types can be found within Cornell University's excellent online digital imaging tutorial at http://www.library.cornell.edu/preservation/tutorial/metadata/table5-1.html.

After digital objects are created and appropriately indexed and described, they must be stored on-line, near-line, and/or off-line. The Website of the University Archives and Records Program (UARP) of the University of Michigan http://www.umich.edu/~bhl/bhl/uarphome/storage.htm) provides an explanation of these storage options. If off-line storage is chosen, various storage media may be used, e.g., magnetic tape or CD-ROM. Maintaining physical stability of the selected storage media is an important short-term preservation concern. Over time, however, obsolescence of hardware and software, i.e., the technology chain used to access digital objects, becomes a far greater concern. For example, it matters little if a CD-ROM survives intact for 50 or even 100 years if, after that same time period, no device exists capable of retrieving the data on the disk. And so, another major challenge of digital preservation involves maintaining the integrity and functionality of the technology chain. At present, there are significant obstacles to achieving this goal, mainly cost.

Upgrading to new hardware and software platforms may prove prohibitively expensive over time. To further complicate matters, a practical, universally reliable way of migrating existing digital data to any newly established hardware and software platforms has yet to be developed. Backward systems compatibility can help in this regard, but that is offered at the discretion of vendor(s) and is not usually maintained beyond two or three generational changes. Of course, file integrity is the major concern in migrating data. Many data complications can arise due to incompatible file formats, compression problems, and so forth. Even if migration procedures were more standardized, they would necessarily involve a significant commitment of time and resources, making them challenging to implement.

Doing digital preservation well is no easy task. The best approach is to craft a carefully coordinated digital information management program, including:

- Institutional (or consortial) commitment to maintaining the infrastructure (e.g., hardware, software, and highly skilled personnel) necessary to support digital preservation
- Image quality benchmarks appropriate for creating digital assets worth preserving
- Inclusion of sufficiently detailed metadata (descriptive, structural, and administrative)

- An appropriate digital archiving strategy, providing security and ensuring integrity and quality of digital assets, which may involve establishment or contracted use of a trusted digital repository. See http://www.rlg.org/longterm/attributes01.pdf.
- Effective risk management

Currently, it makes sense for most institutions to use digital imaging as an access tool while, simultaneously, relying on more traditional approaches for preservation. For example, a collection might be microfilmed for preservation and a scanned copy produced for access purposes.

## *Preservation Microfilming and Photocopying Worksheet*

**Photocopying**

1. Does the institution use photocopying as a preservation tool? What types of materials have been preservation photocopied?

2. Is the work done in-house or contracted out? If it is contracted out, who is the vendor and what standards and procedures does the vendor follow? If it is done in house, is the copying done with an electrostatic copier on paper that meets the ANSI/NISO standard for permanence?

**Preservation Microfilming**

1. Have historical materials been microfilmed for preservation? If yes, describe what has been filmed, when it was filmed, who filmed it, and what standards were followed in the filming and duplication process.

2. If a commercial vendor provides microfilming, does the institution have a contract that specifies preservation standards for filming, processing, and storage? Is the film inspected to make sure it meets quality standards? What inspection methods are used?

3. Are archival enclosures used for storage of microfilm negatives and positive use copies?

4. Are master negatives of all microfilm stored at an off site location? Does this site meet environmental standards for microfilm preservation?

5. Are microfilm readers cleaned and maintained on a regular basis? By whom, and how often? Are staff and users instructed in the use of microfilm equipment? Are users well supervised?

6. Are there breaks, scratches, spots, or other damage in the microfilm collection?

## *Reformatting Photographs and Audiovisual Materials Worksheet*

1. Have service copies been made so that original deteriorated photographs are not handled routinely?

2. Do all photographic prints have negatives? If not, is there a program to produce copy negatives? Are there original negatives in the collection that do not have corresponding prints?

3. Are there any nitrate or early safety film negatives in the collection? Is there any evidence of deterioration (bubbling of emulsion, discoloration, odor) that would indicate duplication is needed soon? Have arrangements been made to duplicate and discard any nitrate film?

4. Is there any motion picture film on nitrate base in the collection? Is it stored in a fireproof room, apart from other collections? Have arrangements been made to duplicate it as soon as possible and discard the original film?

5. Have preservation masters and service copies been made of audiotapes and videotapes that are actively deteriorating or are in formats that are becoming obsolete? Are the masters in digital or analog format?

6. What vendor(s) provide duplication services for the collections? Are they experienced in working with historical collections?

## *Digital Imaging Worksheet*

1. Have any of the institution's collections been digitized? Which collections? What was the goal of the project (e.g., to provide short-term or medium-term access, to create digital data that will be preserved over the long term)?

    a. Was the work contracted out? To whom?

    b. What procedures were used? Was care taken to minimize handling damage to collections being scanned?

    c. Are the resulting images of sufficient quality to be successfully used as surrogates for the originals (e.g., are they detailed enough to convey all the pertinent information in the original)?

    d. How are the resulting digital objects indexed and described? How are they stored? Has the issue of migrating data to new hardware and software over time been considered?

    e. Have the scanned collections been preserved using traditional preservation methods (e.g., housing in archival boxes/folders, preservation microfilming)? How?

2. If scanning has not been undertaken, is there interest in digital imaging in the future? Are the institution's administrators and governing board familiar with the limitations of digital imaging as a preservation medium?

## *E. Library Binding*

Although library binding is primarily a strategy for general collections, it can be employed for some damaged historical books. Library binding may be appropriate for historical volumes that have informational rather than artifactual value, such as some genealogy or local/regional history volumes. Any volumes to be bound must have paper that is not too brittle and is strong enough to withstand the binding process. Commercial library binding should never be used for any volumes that have value as artifacts.

The long-term preservation and usability of rebound volumes has increasingly become a concern in library binding. When binding any library materials, it is important to ensure that the binding alters the text block as little as possible, that the binding itself is as non-damaging as possible, and that the rebound volume will open easily to 180° and stay open as the researcher is working.

A number of options are available for library binding, and they can be confusing to those with little experience. Options include recasing, sewing through the fold, double-fan adhesive binding, and oversewing. In the context of historical collections, however, there are some general guidelines.

Whenever possible, original signatures and sewing should be preserved. If the original sewing is intact, the volume should receive a new case. If the sewing is deteriorated, the book should be resewn through the original sewing holes if possible. Be aware that this is an expensive option, however. The less expensive option of double-fan adhesive binding is used a great deal for general collections, and it can be a durable binding. In double-fan adhesive binding, the spine is milled and a machine applies adhesive to the leaves as they are fanned back and forth. Oversewn volumes, on the other hand, often do not open well, and the pages can tear easily if they become brittle in future. This option should be avoided whenever possible.

When rebinding materials from historical collections, there are some additional issues to consider. A “no-trim” policy (do not trim the edges of the text block) should be specified unless the page edges are damaged or the pages are uncut, so that any images or text that extend to the edges of the pages will not be lost. If paper repairs are to be undertaken, a paper-based pressure-sensitive tape with acrylic adhesive should be used (document repair tape, available from conservation suppliers). All materials used in the binding should be archival quality. If the book has value as an artifact and would merit page repairs done with Japanese paper, it should not be library bound.

The institution should have a contract, or at least an informal agreement, with its library binder that specifies the institution’s preferences for leaf attachment and the other binding issues noted above. Books returned by the binder should be individually inspected for quality of work and adherence to these specifications.

Binders used for research materials should be members of the Library Binding Institute (LBI, at http://www.lbibinders.org), the library binding professional organization. The binding industry has adopted formal standards for library binding. At present, ANSI/NISO/LBI Z39.78–2000 *Library Binding* (Bethesda, MD: National Information Standards Organization, January 2000) is the library-binding standard of record. A free .pdf copy can be downloaded from the NISO web site at http://www.niso.org.

## *Library Binding Worksheet*

1. Does the institution use a library binder for binding or rebinding of monographs or serials in the historical collection? If yes, what binder does the institution use? Is the binder a member of the Library Binding Institute?

2. Does the institution have a written contract or specifications with the binder, beyond a product/price list? If so, attach a copy to the survey, or describe the terms and specifications included.

3. What items from the historical collection have been rebound? How are decisions made about which items should or should not be rebound?

4. Does the institution specify the method of leaf attachment to be used, or is that decision left to the binder? Is there a no-trim policy?

5. What type of quality control inspection(s) is performed by staff for items that have been returned from the bindery? Does the inspection consist only of checking to insure that labeling is correct, or is the structure of the book inspected as well (e.g., are the spine and joints shaped properly, are the covering material and endpapers attached properly)?

6. Does the work done by the current binder appear to be satisfactory?

## *F. Repair and Treatment*

### 1. In-house Treatments

Book repair procedures for general circulating collections should never be used on historical volumes with artifactual or permanent research value. Paper collections with artifactual or permanent historical value also should not be treated in-house. To determine if an object is appropriate for in-house treatment, consult a conservator before proceeding. Sometimes the best treatment is no treatment at all.

In the context of historical collections, "safe" in-house techniques include rehousing objects in archivally appropriate enclosures, simple cleaning of books and some paper using archivally sound procedures and materials, simple repairs of book pages or documents, and polyester film encapsulation of documents. The latter is usually reserved for materials that are handled frequently. Guidelines for rehousing various types of collections (e.g., boxing books, using pamphlet binders, placing documents and manuscripts in archival folders and boxes) are in previous sections of this guide. Instructions for simple page repairs, cleaning, and polyester encapsulation are provided in *PLAM3*, but these activities should be undertaken only when absolutely necessary, and only after training and extensive practice on unimportant items. In practice, most small to medium-sized institutions have other preservation needs of higher priority than repair of individual items.

**TIPS FOR TAKING ACTION**

- Attend a workshop on proper repair techniques for historical collections
- Identify any important objects that are badly deteriorated and have a conservator evaluate them
- Gather records of conservation treatments performed on collection items and create a permanent file for them

All other treatments should be done by professional conservators, bookbinders, or technicians working under the supervision of an experienced professional. Paper that has artifactual or permanent research value should only be mended using conservation-approved methods and materials. Pressure-sensitive tapes and many other adhesives have proven unstable over the long term, and many will cause permanent damage.

### 2. Professional Conservation

Treatment of individual books or other objects by a conservator should be determined by their value to the collections and the availability of funds for conservation. Setting relative priorities among the collections held by the institution should be the first step: criteria to be considered include condition; monetary, historical, or artifactual value; importance for research; and expected use. The choice of a treatment for any specific object or group of objects will depend on the value of the object in its original form, the importance of the information it contains, the condition of the object, and the need to provide access to the original artifact itself. For example, it is more important to treat books that are in fragile condition and must be handled by researchers than it is to treat books that are in poor condition but are never handled. Keep good records of all treatments, in case any further work needs to be done. Conservators usually provide a treatment report, which should always be retained by the institution.

"Conservation Treatment Options for Works of Art and Artifacts on Paper" and "Conservation Treatment Options for Bound Materials of Value," and "Choosing and Working With a Conservator", all

found in *PLAM3*, provide additional information on choosing appropriate conservation treatments and working with a conservator. To find a local conservator, consult the American Institute for Conservation's online guide to conservation services at http://aic.stanford.edu/faic/refer.html.

## *Repair and Treatment Worksheet*

In-house treatment

1. Have historical materials been repaired in-house in the past? What was repaired, by whom, and what supplies and procedures were used?

2. Are items from the historical collection currently repaired in-house? What is repaired, and by whom? Are archival quality supplies and proper procedures used? What training has the person performing repairs received?

3. How are items in need of repair identified? Is there an established procedure for periodic examination of collections? Are value for research and level of use taken into account when making repair decisions?

4. Are permanent records kept of all repairs made to collection items?

Conservation Treatment

1. Have items from the historical collection received conservation treatment? What are they, and who treated them?

2. How are materials in need of conservation treatment identified?

3. Are there standard procedures for making decisions to send items for conservation treatment? Do they consider artifactual value, monetary value, informational value, condition, and level of use?

4. Are permanent records kept of all conservation treatments that are carried out?

# V. WHAT'S NEXT? PRESERVATION PLANNING

Preservation planning surveys focus primarily on the physical conditions in a repository, but this is only one aspect of preservation decision-making. Other elements include the intrinsic value of artifacts, their importance to a collection, legal and historic value, the ease and cost of replacement, and other factors that can only be identified by the collections' custodians. Wise preservation decisions can only be made when the collections are under good intellectual control (that is, when they are fully catalogued or inventoried) and when their relative value to the institution has been established.

Preservation is expensive and time-consuming; priorities must be set. Good environmental control is difficult to achieve and costly to maintain; the smaller the quantity of materials that require narrowly controlled conditions, the more manageable the problem becomes. Items of no long-term importance to the collections must be identified so that resources are not wasted on them. Items that do have significance need to be identified for special storage requirements or immediate care.

## *A. Summarizing preservation needs*

Once the survey has been completed, it is essential to summarize the preservation needs that have been identified by preparing a survey report. This report can follow the same (or similar) structure as the survey guide, noting observations and recommendations for each section.

Sample observations/recommendations for a section on emergency preparedness for a local history collection within a public library follow:

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### Emergency Preparedness

**Observations**

The building's roof is pitched, with asphalt shingles. Drainage is by gutters and downspouts. There have been some isolated problems with leakage from the roof, but these have been addressed. Staff reports that there has been occasional seepage of water into the basement storage room, and two small boxes of historical materials were damaged by water on the floor a few months ago. Otherwise there do not appear to be any serious water hazards that affect the local history collection. There are no water detectors installed in the building. The exterior of the building appears to be in generally good repair, although there is some peeling paint inside and out. There is no written building maintenance schedule or log of building maintenance and problems.

The building is equipped with a partial system for smoke and fire detection. The system is monitored 24 hours a day by a security company. There appears to be only one smoke detector in the local history room, which is fairly large. There appears to be one heat detector (which has been painted over) in the basement storage room. The security company inspects its systems monthly, and the detection system is inspected annually. There is no fire suppression system in the building, although the fire marshal has recommended one. There is an annual inspection of the building by the fire department. Fire drills are not held. Portable fire extinguishers are available throughout the building and they are inspected yearly. Staff members have been trained in their use. The library has one book drop, which does not open into the building—this is excellent, since unfortunately some libraries have been damaged as a result of incendiary devices placed into book drops.

The library has a written disaster plan that was prepared several years ago, using a template. The local history librarian is responsible for updating it. She has recently attended a workshop on disaster planning.

**Recommendations:**

- **Establish a written building maintenance schedule and begin to keep a log of building problems and actions taken to solve them.** A written schedule will help to make inspections and maintenance routine, and a written log of problems eliminates the need to rely on staff memory of past problems with the building.

- **Have the fire detection system for the building inspected by a professional, to ensure that all areas, particularly those that house local history materials, are up to code.** All of these areas should have a combination of heat and smoke sensors that are connected to the monitoring company 24 hours a day.

- **Test the fire detectors quarterly, to ensure that the system would work properly if it were needed.** This is crucial, as the detection system is the building's primary protection against fire. It is excellent that the security company tests its monitoring equipment monthly.

- **Hold periodic fire drills to ensure that everyone knows how to exit the building safely.** There is a written fire drill plan in the existing disaster plan.

- **If collections must be stored in the basement storage area, insure that they are stored at least four inches off the floor, and install one or more water detectors (available from conservation suppliers).** The detector(s) should be connected into the fire detection system so that they can be monitored 24 hours a day. As noted elsewhere in this report, historical materials should be removed from the basement if possible.

- **As a precaution, map out the locations of water sources in the building (including water pipes, HVAC equipment, restrooms, etc.) and note their proximity to collections, particularly the local history collection.** This information should be included in the disaster plan, and steps should be taken to relocate or otherwise protect any important collections that might be vulnerable.

- **Update the library's disaster plan.** See the Emergency Management section of *PLAM3* (at http://www.nedcc.org) for salvage guidelines, and Conservation OnLine (http://palimpsest.stanford.edu) for sample plans. Specific changes I would suggest include:

    - **Place the plan into a tabbed notebook to make it easier to locate important information in the event of an emergency.** At a minimum, each chapter should have its own tabbed divider.

    - **Update resources, phone numbers, and contact people.** If possible, this should be done on an ongoing basis, as some types of information change frequently. Certainly all information should be checked once a year. I noticed at least one resource that is no longer available.

    - **Provide information on how to access the local history room and the locked cabinets inside the room if there is an emergency and the local history librarian is not available.**

    - **Provide detailed collection priorities for the local history collection (so that other staff members could rescue materials if the local history librarian were not available).** Which materials are the most important to rescue in case of disaster and where are they? It will be helpful to include a floor plan indicating the location of important collections, but for security reasons, this might be included only in one or two copies of the plan.

    - **Provide a listing of volunteers** who might assist in a large disaster.

    - **Provide a list of local freezer storage space that would be available in the event of a large water disaster.** A local university food service or a local grocery store might be able to help, but they need to be contacted ahead of time. Vacuum freeze drying services are helpful once conditions have been

stabilized and decisions can be made about how to treat damaged collections, but wet collections need to be frozen locally as quickly as possible (to minimize damage and prevent mold growth).

- **Other actions that should be taken to improve emergency preparedness include:**

  - **Keep copies of the disaster plan off-site, in case the building is inaccessible in an emergency.** Some institutions have senior staff members keep copies at home or in their cars, so that the plan will always be available.

  - **Hold a yearly training session for staff members to familiarize them with the disaster plan and with the recovery measures recommended therein.** The purpose of such a session is to ensure that staff members are not reading the plan for the first time during an emergency; instead, they will have a basic understanding of response and recovery procedures beforehand. They should be familiar with general salvage procedures for collections and use the plan for reference to confirm instructions or provide additional details such as phone numbers or procedures for specific media.

- **Over the long term, install a wet-pipe sprinkler system throughout the library.** As noted above, preservation professionals currently consider this the best protection for library and archival collections.

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It may also be useful to prepare an executive summary for the survey report that sets forth short-term, medium-term, and long-term preservation priorities. Short-term priorities would be problems requiring immediate action and/or projects that can be undertaken with existing staffing and funding. Medium-term priorities would be projects that will require additional funding, planning, and/or staff time. Long-term priorities would include steps to be taken once short- and medium-term goals have been accomplished, as well as large-scale activities (e.g., new environmental systems, installation of sprinklers) that must be planned for over the long term.

## *B. Setting priorities for preservation action*

When resources are limited (as they almost always are), choices will have to be made. Every institution with collections of enduring value should have a preservation plan that weighs the needs of the collections against institutional resources and provides a list of priority preservation actions.

Although a survey should be the first step in putting together a preservation plan, the survey report in itself should not be considered a plan. A survey report assesses the overall condition of the building and collections, and it describes preservation needs, but it cannot provide a complete analysis of the many additional factors that must be considered when setting priorities for actual preservation action. Some factors—such as available funding for preservation, staff time and expertise, and user demand for collections—change as institutional circumstances change. Other factors that affect preservation priorities require an in-depth understanding of the institution and its collections that only staff members possess, such as the relative value of collections to the institution and political considerations.

There is consensus regarding the issues to consider when prioritizing potential preservation actions. The following criteria are taken from *Preservation Planning: Guidelines for Writing a Long-Range Plan*, referenced in the *Resources* section:

<u>Collection-specific</u>

1) Use—materials that are used frequently, whether consulted by researchers or exhibited routinely, may

be at higher risk than other collections.
2) Storage—collections that are stored under adverse conditions, whether environmental or in damaging enclosures, may require prompt preservation action.
3) Condition—items or collections in fragile condition may be at risk of loss unless they receive attention quickly.
4) Value—either absolute value (rarity, monetary worth, intrinsic or associational value) and/or relative value of collections to an institution may influence preservation priorities. Whether collections have long- or short-term value to an institution will also influence decision-making.
5) Format—whether materials need to be preserved in their original format will also influence priorities.

Overall

1) Impact—those actions that will result in dramatic improvement in current conditions or a slowing of deterioration, or that will affect the greatest number of items, will often be the highest priority.
2) Feasibility—this factor is essential; it includes staffing levels and expertise, financial considerations (outside funding, operating costs, expenses for materials and services), policy and procedural changes required, and political considerations. Even if the impact of a preservation action is high, it may be given a low priority if implementation is not feasible.
3) Urgency—there will always be some activities that require immediate action; collections may be damaged or lost, or an opportunity to act on a particular project may be lost if action is not taken.

In general, preservation activities that will have high impact (e.g., improved climate control, rehousing of a collection, or microfilming) and are highly feasible (e.g., the staffing, time, and money is available to carry them out in the near future) will be the highest priority. Activities with high impact but low feasibility (e.g., replacing the HVAC system) may be given a lower priority until circumstances make them more feasible, while actions that are feasible but have only minimal impact (such as installing UV sleeves on fluorescent lights) may or may not be undertaken, depending on such factors as cost, visibility within the institution, and collection value. Even if it is only possible to begin with small projects, a written preservation plan will allow the institution to act when the opportunity arises to address more ambitious preservation projects.

# VI. CONCLUSION

This self-survey guide assesses an institution's preservation needs—how well does the institution's building protect its collections, what is the general condition of its collections, and what are its policies and procedures for preservation management? A self-survey is a solid first step toward building a systematic preservation program. Once the survey is complete, trouble spots should be obvious, and necessary remedial action will probably be apparent. The institution will have concrete information that will allow it to develop a preservation plan and begin to undertake appropriate preservation activities. It can then join the growing number of institutions that are effectively allocating preservation resources to ensure that their historical collections will survive into the future.

# VII. RESOURCES

***Preservation Surveys and Preservation Planning***

Dalley, Jane. *The Conservation Assessment Guide for Archives*. Ottawa, ON: Canadian Council of Archives, 1995.

Green, Sara Wold, ed. *The Conservation Assessment: A Tool for Planning, Implementing, and Fundraising*. Washington, DC: The National Institute for the Conservation of Cultural Property and the Getty Conservation Institute, 1990.

Ogden, Sherelyn. *Preservation Planning: Guidelines for Writing a Long-Range Plan*. Washington, DC: American Association of Museums and Northeast Document Conservation Center, 1997.

***Finding a Surveyor***

The Regional Alliance for Preservation, at http://www.rap-arcc.org. A cooperative group of 14 regional conservation centers and other preservation organizations. Many of them provide survey services.

The American Institute for Conservation (AIC) *Guide to Conservation Services*, at http://aic.stanford.edu/faic/refer.html, or AIC, 1717 K Street NW, Suite 200, Washington, DC 20006; Phone: (202) 452-9545, ext. 1. AIC is the professional association for conservators and has a referral service that provides a list of conservators in the desired geographical area.

***Funding Sources***

Institute for Museum and Library Services, at http://www.imls.gov. Provides grants for preservation surveys for museums, through the Conservation Project Support program and the Conservation Assessment Program.

National Endowment for the Humanities, Preservation Assistance Grants, at http://www.neh.fed.us/grants/guidelines/presassistance.html. This program provides grants to smaller institutions for preservation planning surveys.

Some state grant programs fund preservation surveys, such as the New York State Conservation/Preservation Grant Program and the Massachusetts Board of Library Commissioners preservation grants. Check with the state library or state archives to find out about programs.

***General Preservation***

ANSI/NISO Z39.79—2001 *Environmental Conditions for Exhibiting Library and Archival Materials*. Bethesda, MD: National Information Standards Organization, March 2001. Available at http://www.niso.org.

ANSI/NISO/LBI Z39.78–2000 *Library Binding.* Bethesda, MD: National Information Standards Organization, January 2000. Available at http://www.niso.org.

Banks, Paul N. and Roberta Pilette, editors. *Preservation: Issues and Planning*. Chicago: American Library Association, 2000.

Conservation OnLine (CoOL), at http://palimpsest.stanford.edu. The online clearinghouse for resources on collections preservation. Contains information on preservation topics and provides links to numerous preservation organizations.

Fennelly, Lawrence J. *Effective Physical Security*. 2nd ed. Boston: Butterworth-Heinemann, 1997.

Ogden, Sherelyn. *Preservation of Library and Archival Materials: A Manual*. Andover, MA: Northeast Document Conservation Center, 1999. Also available online at http://www.nedcc.org.

Schnare, Robert E. *Bibliography of Preservation Literature*, 1983-1996. Lanham, MD: The Scarecrow Press, Inc., 2001.

Trinkaus-Randall, Gregor. *Protecting Your Collections: A Manual of Archival Security*. Chicago: Society of American Archivists, 1995.

***Environment***

Appelbaum, Barbara. *Guide to Environmental Protection of Collections*. Madison, WI: Sound View Press, 1991.

Lull, William P., and Paul N. Banks. *Conservation Environmental Guidelines for Libraries and Archives*. Ottawa, ON: Canadian Council of Archives, 1995. This excellent resource is out of print, but it is worth trying to obtain through interlibrary loan.

Wilson, William K. *Environmental Guidelines for the Storage of Paper Records*. NISO Technical Report (NISO-TR01-1995). Bethesda, MD: NISO Press, 1995. Available from NISO Press, P.O. Box 338, Oxon Hill, MD, 20750-0338; 1-800-282-NISO; or at http://www.niso.org.

***Disaster Planning***

Dorge, Valerie, and Sharon L. Jones, comps. *Building an Emergency Plan: A Guide for Museums and Other Cultural Institutions.* Los Angeles, CA: The Getty Conservation Institute, 1999.

Fortson, Judith. *Disaster Planning and Recovery: A How-To-Do-It Manual for Librarians and Archivists.* New York: Neal-Schuman Publishers, Inc., 1992.

National Task Force on Emergency Response. *Emergency Response and Salvage Wheel*. Washington, D.C.: The Task Force, 1997. A compact reference tool to assist in immediate response procedures in the event of disaster. Ordering and other information at http://www.heritagepreservation.org.

Walsh, Betty. "Salvage at a Glance" and "Salvage Operations for Water Damaged Archival Records." *WAAC Newsletter* 19.2 (May 1997). Available at http://palimpsest.stanford.edu/waac.

Wellheiser, Johanna, and Jude Scott. *An Ounce of Prevention: Integrated Disaster Planning for Archives, Libraries, and Records Centres, 2nd ed.* Lanham, MD: Scarecrow Press, 2002.

***Specific Types of Collections***

Bachmann, Konstanze, ed. *Conservation Concerns: A Guide for Collectors and Curators*. Washington, D.C.: Smithsonian Institution Press, 1992.

Clapp, Anne F. *Curatorial Care of Works of Art on Paper: Basic Procedures for Paper Preservation.* New York: Nick Lyons Books, 1987.

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