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Disaster Preparedness Workbook for Cultural Institutions Within the Military

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Preface

1. *The Disaster Preparedness Workbook for Cultural Institutions Within the Military* was written to cover all types of disasters and to help Cultural Institutions safeguard their informational resources as we are all self-insured. Loss of these resources would seriously impact on our mission.

2. *The Disaster Preparedness Workbook for Cultural Institutions Within the Military* can be customized to local needs. This will allow each institution to create a Disaster Manual specific to their institution. Once the Manual has been customized, the table of contents can be regenerated in Word so that the correct page numbers will appear. See the Introduction to the 2nd Edition for detailed instructions.

3. The creation of this workbook has been a goal of mine for a number of years. The first workbook, *Disaster Preparedness Workbook for U.S. Navy Libraries and Archives*, is modeled after the *Disaster: Readiness, Response and Recovery Manual* (1992) compiled for the state of Rhode Island. This workbook was originally written and compiled in 1998 by Lisa Fox, a Preservation Consultant working for the Northeast Document Conservation Center. It has been extensively revised by Beth Patkus, Preservation Consultant. The workbook has been critiqued by several preservation experts. I have also critiqued the publication. The extent of the publication has been to insure that all aspects of disaster contingencies have been covered. The one exception is a chapter on terrorism which I hope to write in the future.

4. While extensive effort has gone into ensuring the reliability of information appearing in this workbook, the authors make no warranty, expressed or implied, on the accuracy or reliability of the information, and do not assume and hereby disclaim any liability to any person or organization for any loss or damage caused by errors or omissions in this publication.

5. I would again like to acknowledge that part of the support for the production of this revised workbook has been provided by a grant to the U.S. Naval War College Library by the Department of Defense Legacy Resource Management Program.

6. If anyone has questions concerning the workbook, please feel free to contact me.

Robert E. Schnare, Director
U.S. Naval War College Library (Retired)

I retired on July 3, 2009 and can be contacted via e-mail at Schnarer@gmail.com or by cell at 401-447-3527.

Table of Contents

Background Information

Introduction to the 1st Edition

This workbook focuses on the disaster-related needs of librarians, archivists, and records managers in documentary collections--that is, in collections of printed documents, magnetic media, electronic records, and so on--of the United States Navy. The workbook outlines plans that deal with a whole range of events, from routine leaks to large-scale natural disasters. Because the workbook will be used in Navy installations throughout the world, a wide variety of disasters are covered, but the focus is upon those that are most common within the United States.

Disaster Preparedness Workbook for U.S. Navy Libraries and Archives will be used by personnel in widely divergent types of institutions--from the Navy's small libraries on military bases to its major historical and research collections in the academy and colleges. Therefore, every effort has been made to use general language. For example, the terms "collection," "materials," and "holdings" refer to the whole panoply of formats, including books and periodicals, archives and manuscripts, photographic media, maps and drawings, audiovisual materials, magnetic media and electronic data, and so on. The term "repository" refers to any type of collection-holding institution; it encompasses libraries and archives, but also may refer to museums, records centers, and other documentary collections.

How to Use the Workbook

This workbook provides basic information and instructions as well as a template that personnel can use to write their own plans. Most of the explanatory text is in sections labeled "Background Information" (such as "Background Information on Response Procedures"). Read them and use the information there, but do not distribute them as part of your plan. Sections with a title bar, such as the "Cover Page" and "Introduction to the Plan," should be used as a template for your plan. Within those sections, instructions appear in italic type--for example, *Specify the responsible position*. Use those instructions and tips, but do not include them in your written plan.

Begin work with the sections that are most important to you, with those that address your greatest concerns or vulnerabilities. Depending on your geographic location and the nature and purpose of your collections, some sections may be deleted altogether. For example, an organization far inland will not need to include the sections that relate to hurricanes. Above all, tailor this workbook to your needs. Work on the sections that are useful, modify the materials to suit your situation, and discard what is not needed or relevant. The Introduction to this workbook offers further guidance about the planning process.

Involve other appropriate personnel throughout the planning process. The fire department, facilities staff, and administration may have useful contributions to make, as well as staff within the repository. Once the plan is written, be sure to share a copy with those other units.

Human Safety

The *Disaster Preparedness Workbook* focuses on protection and recovery of collections. **However, the protection of human life and safety should be the unquestioned first priority of all repositories at all times.** When training personnel to implement response and salvage procedures, make clear that they are never to risk their safety to protect the collections.

Similarly, be mindful of specific health risks that may relate to recovery. All individuals involved with the recovery should have an up-to-date tetanus shot. Other immunizations may also be needed based upon the recommendations of the local Navy medical officials. Some individuals may be highly allergic to mold, latex gloves, various chemicals, or other substances used in disaster projects. To the extent possible, identify these conditions in the planning stage and be sure personnel are not assigned jobs that would be risky for them. Some people may have undiscovered conditions, so be alert to symptoms during the recovery operation.

Caution to Non-Military Organizations

Librarians and archivists outside the military will find much that is useful in this workbook. However, it should be adapted with care, for the realities of Navy organization have shaped the text in ways that differ from others. Some sources of assistance that would be available to civilian organizations are not contemplated in this workbook. For example, the plan assumes no assistance or support from the Federal Emergency Management Agency (FEMA), for it is more likely that FEMA would call on the Department of Defense in a major disaster than vice versa. Little attention is paid here to commercial insurance or FEMA reimbursement, because the vast majority of Navy collections are self-insured. Throughout the text, there are references to Navy regulations that govern health and safety, procurement, and the like. Others who use the workbook as a template should do so with caution.

Acknowledgments

The literature on disaster preparedness has been evolutionary, with various writers building upon the work of those who came before. This workbook is no exception. Many readers will notice its similarity to *Disaster Readiness, Response and Recovery Manual* (Providence, R.I.: Rhode Island Department of State Library Services, 1992), which was used as a model for this workbook. The author and project leaders are grateful to the Director of the Rhode Island Office of Library and Information Services (formerly Department of State Library Services) for allowing some of the form and content of that manual to be used here.

Important information also was gleaned from various leaflets of the Northeast Document Conservation Center, and two are reproduced in Appendix Q. Betty Walsh's "Salvage at a Glance" instructions (*WAAC Newsletter* 10:2, May 1988, and 19:2, March 1997) provided guidance on salvaging artifacts. Much useful information for Appendix B was contributed by *Disaster Recovery Supplies and Suppliers*, Caroline Gilderson-Duwe, compiler (Madison, Wisc.: Wisconsin Preservation Program, 1995).

The disaster plans of some organizations served as useful models. Some sections have been closely adapted from plans of the Library of Virginia and of the Virginia Historical Society. Further insights were provided by those who read drafts of this workbook and provided valuable ideas about how to improve its organization and content. Thanks go to the following:

- Karma Beal, Archivist, National Institute of Standards and Technology, U.S. Department of Commerce
- Joan Buntzen, Librarian of the Navy
- Michele Cloonan, Department Chair and Associate Professor, Graduate School of Education and Information Science, University of California at Los Angeles
- Sheryl J. Davis, Preservation Officer, University of California at Riverside
- Ann Morgan Dodge, Conservator, Brown University
- Jane Hedberg, Serials Librarian and Preservation Administrator, Wellesley College
- Rick Schultze, Safety Manager, U.S. Naval War College
- Don Westcott, Deputy Chief, NETC Fire Department

Special thanks go to Sheryl Davis, who provided much-needed assistance in developing the response procedures for wildfire included in the workbook.

Perhaps most important, Robert E. Schnare (Director, U.S. Naval War College Library) provided essential guidance and problem-solving throughout the development of this workbook. Not only was Bob an insightful reader of the workbook, but--throughout the vicissitudes of writing and revisions--he was kinder and more patient than I had any reason to expect. The staff of the Northeast Document Conservation Center was a treasure trove of information, and they willingly shared it.

Lisa L. Fox
February 1998

Introduction to the 2nd Edition

Overall recommendations and techniques for disaster recovery planning have not changed significantly since this workbook was first published in 1998, but the events of 9/11/01, the subsequent anthrax outbreaks, and the losses incurred as a result of Hurricanes Katrina and Rita during the summer of 2005 have given disaster-planning efforts a new urgency.

It is crucial that a disaster plan be constantly revised and updated to reflect changes in the institution and the surrounding environment. The events of 2001 and the hurricanes of 2005 have brought new risks to consider and highlighted vulnerabilities in existing disaster plans. This revision of the *Disaster Preparedness Workbook* reflects these new realities.

In addition, new information on disaster planning for museums and historic sites has been added to the *Workbook*. The change in title (from *Disaster Preparedness Workbook for U.S. Navy Libraries and Archives* to *Disaster Preparedness Workbook for Cultural Institutions Within the Military*) reflects this broadened scope.

Specific Changes to the *Disaster Preparedness Workbook*

For those who have already created a plan based on this workbook, a list follows of the major revisions.

- A table of contents feature has been added, which allows the user to regenerate the table of contents so that the page numbers are correct once the user has made changes and additions to the *Workbook*. This is done by highlighting the table of contents, then choosing Reference on the Insert menu, then choosing Index and Tables, then Table of Contents, and then choosing "OK". Please note that the appropriate letters in the pagination for the appendices will need to be added manually after the table of contents is generated.
- Within the main text, chapters have been added on Lessons Learned from 9/11/01, Lessons Learned from Hurricane Katrina, and Disaster Preparedness and Salvage for Museums and Historic Sites.
- Emergency instructions have been added for responding to potential terrorist attacks (conventional, chemical, biological, radiological).
- Responsibilities for business continuity planning, preparation of staff personal safety kits, and periodic evacuation drills and training of staff have been added to the Prevention/Protection chapter.
- Additional information on arranging for supplemental personnel and on caring for employees after a disaster has been added to Appendix A.
- Basic response procedures for mold have been revised, and a section on mold remediation for large-scale infestations has been added to Appendix D.
- Appendix E has been expanded to provide further information on protecting against chemical, biological, and radiological (CBR) hazards.
- Appendix F (communication plan) has been updated in light of the lessons learned from September 11th.

- Appendix G has been completely revised to reflect the increasing proliferation of information technology in libraries.
- Appendix R has been revised to include protocols for shutting down the ventilation system.
- References to additional resources have been added throughout the workbook.

It has been argued that no disaster plan would have been adequate to deal with the events of fall 2001 and the hurricanes of 2005. In one sense this is true, but it is also true that those businesses and cultural institutions with well-thought out and well-rehearsed disaster plans were back in business much sooner than those that did not have them.

It is hoped that this revised *Disaster Preparedness Workbook* will encourage cultural institutions of all types to take a second look at their disaster plans, so that they will be better prepared when the next emergency (large or small) occurs.

Lessons Learned from 9/11/01

There is much to learn from the experiences of those organizations affected by the attacks of 9/11/01 and the subsequent anthrax outbreaks. While these obviously include an enormous number of companies and organizations, the users of this workbook will find the experiences of the Pentagon Library and of cultural institutions in lower Manhattan of particular interest. Most cultural institutions had at least a minimal plan for salvaging collections, but had not planned for a situation in which access to the institution's building and collections was denied for a significant period of time.

Recovery efforts have highlighted issues such as business continuity planning and redundancy of resources (including information technology resources) that have generally received less attention than collections salvage in the disaster plans of cultural institutions. Cultural institutions would be well served by emulating the business continuity plans found in business and government.

The attacks of 9/11/01 and the subsequent anthrax outbreaks have also changed the types of risks that must be considered in a disaster plan. Once libraries focused primarily on fire, water leaks, and weather-related risks, but now cultural institutions (and particularly the military or other federal agencies using this workbook) that once saw themselves as unlikely targets must now count terrorist attack among the risks to be planned for. Attacks using conventional explosives, chemical or biological agents, and/or radiological contamination are all possible. Institutions must also be more aware of the dangers of mold, which became a serious problem for a number of institutions that were unable to access their buildings for a week or more.

Cultural Institutions and the 9/11 Attacks

In considering the lessons to be learned from the events of Fall 2001, an overview of the damage to cultural institutions will be helpful. Those who would like more information should consult Heritage Preservation's informative *Cataclysm and Challenge: Impact of September 11, 2001 on Our Nation's Cultural Heritage*, referenced in the *Resources* section.

The World Trade Center Complex. The World Trade Center complex included not just the North and South Towers (also known as Tower One and Tower Two), but also five other buildings in close proximity (one was a hotel, and the others were office buildings), surrounded by large open areas that housed over 100 pieces of art, including massive outdoor sculptures. On September 11th, the South Tower collapsed first, just before 10 a.m., and the North Tower followed at 10:28 a.m. Fires burned for days, and by the time the situation was stabilized so that recovery could begin, all of the remaining five buildings in the complex had been essentially destroyed.

Other buildings in close proximity that suffered serious damage included the World Financial Center (four office buildings and the Winter Garden atrium), the 90 West Street building (a city and national landmark that was being restored), and the Barclay-Vesey Building (a landmark and one of the

city's first Art Deco skyscrapers, which also served as the headquarters for Verizon Communications).

When the Trade Center towers fell, fire and falling debris destroyed the Winter Garden atrium, ripped holes in the roof of 90 West Street (through which flaming debris entered and caused fires), and sent steel beams crashing into the Barclay-Vesey Building, severely damaging the historic façade and damaging the underground vault that housed Verizon data and telephone lines and cutting off telephone, fax, and high-speed data lines throughout lower Manhattan.

Cultural collections housed within the Trade Center complex and the surrounding severely damaged buildings were simply destroyed. It is difficult to assess with precision exactly how much was lost, since inventories were destroyed along with collections in most cases.

Losses in the World Trade Center complex included numerous corporate art collections, at least 21 corporate libraries, the records and archives of the Lower Manhattan Cultural Council, the U.S. Customs Service Regional Library, almost the complete archives of the Port Authority of New York and New Jersey, the library of the National Developmental Research Institutes (NDRI), and the records of 22 federal government department and agencies with offices in the complex. Losses in surrounding buildings included the archives and records of the Helen Keller International Foundation in the 90 West Street building.

In considering what was lost, however, it is also worth noting that a small number of materials were miraculously unearthed from beneath the debris. These include boxes containing artifacts from an important African burial ground that had been stored in rooms beneath 6 World Trade Center, and a collection of about 100,000 photographic negatives belonging to the Port Authority of New York and New Jersey that were found under the debris of the North Tower.

Lower Manhattan. Outside the World Trade Center complex and its neighboring buildings, damage to collections was less than originally feared. A survey performed by the Heritage Emergency National Task Force showed that of the over one hundred cultural institutions located south of 14th Street (including historical records repositories, libraries, and state and municipal agencies), 93% reported no damage to their buildings and 80% reported no damage to collections. Many were able to close or seal windows and other openings, and were able to turn off air intake systems. For example, the Museum of Jewish Heritage in Battery Park City (a few blocks south of the World Trade Center) had a computerized shutdown system for outside air vents and other critical systems. As the towers were burning, the system sensed smoke and began an automatic shutdown. This was interrupted when electrical power was cut to the area, so museum engineers climbed to the roof, hand cranked the remaining vents closed, and turned off water valves before evacuating. When staff members were able to return, they found no damage from dust or debris. Even the humidity had remained stable, due to a moisture barrier installed between the interior and exterior walls.

Some other institutions were not so fortunate; a number of collections did need to be extensively cleaned. The New York Public Library's New Amsterdam branch

(three blocks north of the Trade Center) was closed for two months while 40,000 items were cleaned and reshelved and the air duct system was flushed. In addition, some institutions suffered water damage (and subsequent mold growth due to delays in accessing the sites) from the runoff of fire hoses or from basement flooding due to power failure and subsequent sump pump failure.

The primary challenge for cultural institutions in lower Manhattan, however, turned out to be the resumption of regular business, which will be discussed further in the section on business continuity planning below.

The Pentagon. The Pentagon library holdings include more than 500,000 books and documents, primarily military and other government documents and records. At 9:38 a.m. on September 11th, a plane crashed into the west side of the Pentagon, destroying the outer three rings of offices. When the plane stopped, its nose rested on one of the back walls of the Pentagon library. Due to the jet fuel involved, the resulting fire burned for almost a week, and the library (located on the first floor) sustained significant damage from water seeping down from the upper floors. All utilities were cut off when the plane hit, so there was no climate control. Staff members escaped safely, but were unable to return to the library for 10 days, by which time water had wicked into collections, relative humidity was very high, and mold growth was widespread in the rear section of the library (the technical services and military documents areas). Fortunately, however, the general book collection was spared direct water and mold damage.

Access was further delayed because the FBI had designated the library a crime scene. Once staff was able to convince the authorities to release the site for structural review, it was discovered that asbestos was present due to roof and ceiling collapses. This had to be removed by a licensed asbestos removal firm before recovery could begin. In addition to mold growth, it was found that the water/soot combination had formed hydrochloric acid, which damaged computer equipment and furniture.

It was not until September 26th that a recovery contract was finalized with BMS Catastrophe, a commercial disaster recovery company. BMS installed desiccant dehumidifiers to dry out the library, freeze dried a small quantity of valuable books, and cleaned the remainder of the affected portion of the collection by hand and with HEPA vacuums. Work in the area directly affected by mold was done using HAZMAT suits. Ultimately about 99% of the book collection was successfully salvaged. Soot-covered blocks of microfiche were also cleaned by vacuuming, and all electronics and servers were dry cleaned (using Q-tips and special solvents). The recovery of collections was completed within thirty days, but staff members remained displaced, working without access to the collections.

The Pentagon Library has successfully moved to its new space on the Pentagon grounds.

Cultural Institutions and the Anthrax Outbreaks

In September and October 2001, seven letters, all containing anthrax spores, were mailed from Trenton, NJ to various destinations. One of these letters was sent to

the tabloid publisher American Media, Inc. (AMI) in Boca Raton, FL. This letter ultimately resulted in the closure of the AMI building (and the AMI library within it) for decontamination. Two of the letters addressed to Senate offices passed through the Brentwood mail processing facility in Washington DC (which handles all mail for the federal government). A number of instances of cross-contamination occurred, and ultimately the Brentwood facility was also closed for decontamination. Mail was quarantined for testing, and the government began irradiating all federal mail to render any anthrax spores harmless. In total, the anthrax outbreaks resulted in 22 confirmed cases of anthrax and five deaths.

These events posed a number of challenges to the libraries affected. An AMI employee was the first person to die of anthrax during the outbreak. Two days later, the AMI building had been sealed, all staff and visitors had been put on a regimen of antibiotics, and the library staff had to try to provide services without any of their collections or other resources. For a couple of weeks, staff were scattered at various locations or working from home, until temporary quarters were found in a converted garage. Ultimately, AMI took a two-year lease on another building while considering whether to decontaminate the original building, and the library staff began to reconstruct their collection to the extent possible. This was very difficult, as many of the collections (including the AMI archives) are unique.

The Library of Congress was also affected by the outbreaks, albeit in a different way. The library received no mail from October 17, 2001 to March 4, 2002. All of this mail was irradiated in facilities in Ohio and New Jersey. The mail was exposed to temperatures of 140-170^{o}F and the corners of flats and letters were clipped to dislodge any contaminants and allow for off gassing of carbon monoxide formed as part of the irradiation process. When delivery of mail resumed, there was an estimated backlog of 3 million items. New mail was handled by an outside contractor, Pitney Bowes. This company tested the mail, irradiated it if necessary, and sent it on to the library. All mail was delayed about five days.

In addition to dealing with damage to collection materials from the irradiation process (which included clipping corners, discoloration, ink transfer, deformation of plastic media, etc.), staff members had to undergo health assessments and the environment was monitored for the presence of carbon monoxide and other volatile organic chemicals. The library received $400,000 from Congress to replace some damaged materials, which meant that increased staff time was needed to order and process replacements. Additional staff time was also needed to track irradiated items in the automated library system, so that they could be identified later if necessary.

Lessons Learned: Business Continuity Planning

For the institutions discussed above, coping with the aftermath of disaster and resuming normal business operations proved to be the primary challenge. Salvaging damaged collections was relatively straightforward, with the exception, of course, of those collections extensively contaminated with mold.

Many cultural institutions conduct a risk analysis during the disaster planning process

(a risk analysis determines which events pose the most risk for damage to the building and/or collections), but few conduct what the business community terms a business impact analysis. This is an analysis of the institution's assets and functions; it determines which assets and functions are most critical to the institution's mission, and it develops strategies for backing up or recovering them. In practice, this most often involves backing up or duplicating critical information technology resources, but non-automated functions and assets must be considered as well.

For many commercial businesses, the experience of September 11th showed that much more attention had been paid to backing up data than to contingency plans for relocating employees and providing services to users. Businesses struggled to provide office space, desks, and telephones for their employees.

In New York, all businesses south of 14th Street were ordered by the city to close for three days. Some cultural institutions reopened as soon as was permitted, but others were closed for weeks due to the rescue and recovery efforts and the lack of electrical power and communication systems. The survey of lower Manhattan cultural institutions cited above revealed that 82% had problems with phone and fax lines, and 71% had problems with email. Thirty percent of the respondents reported that staff was temporarily relocated due to the power and communications problems. Over 75% also had disruptions and delays in postal service and other delivery services, largely due to the extensive security precautions put in place after the disaster. The survey also showed that attendance at cultural institutions in lower Manhattan declined in the months following the disaster. Total losses in revenue were estimated at $23 million.

At the Pentagon, library staff dealt with various business continuity problems in the aftermath. Providing reference service to their Department of Defense users was critical, since plans were being made for war in Afghanistan. Staff did the best they could, but access did have to be severely restricted due to the damage. Finding space for staff to work was also a challenge. One third of the office space within the Pentagon had been rendered unusable, so the library staff was competing with about 8000 other displaced workers. Staff members were scattered, working temporarily in various nearby educational and cultural institutions whenever and wherever space was available. The library had not planned for this eventuality through reciprocal arrangements with other libraries or nearby organizations, but was fortunate that colleagues were able to make space available on short notice. Some staff also worked from home. Staff involved in the recovery efforts within the Pentagon simply worked out of briefcases, sitting down temporarily whenever they saw an empty desk.

In an April 2002 presentation for the Federal Library and Information Center Committee (FLICC) Preservation and Binding Working Group, Jerri Knihnicki of the Pentagon Library emphasized the need for cultural institutions to develop a business continuity plan and to revisit it every six months.

She offered the following questions for libraries to consider as a starting point for business resumption planning:

1) Who are our most critical customers?

2) What are the critical services that they value the most and must have access to within 24 hours of a disaster?
3) How would the customer prioritize these critical services? [She noted that in most specialized libraries, databases and IT services would be at the top of the list]
4) What steps would the institution and its infrastructure need to take to get these services up and running within 24 hours of a disaster?
5) What steps are built into the disaster plan to ensure that the staff will have temporary workspace? [She noted that this includes not just space for information technology, but also work/collection space and the utility infrastructure to support these critical functions.]
6) Do staff members have redundancy plans for their most specialized information (e.g., their "prized" special information sources)? [This issue will be discussed further below.]
7) How would you notify your critical customers that you are up and running? [She noted that it is a good idea to let customers know ahead of time if possible.]

Mrs. Knihnicki reiterated that disaster planning should not be just about salvaging collections, but also about maintaining services. She advised that if cultural institutions constantly review the critical elements of their operations, revise their strategic plans, and advocate for their mission to upper level management, they will be in better shape to recover quickly in the event of a major disaster.

A final issue that must be considered in business continuity planning is the loss of employees in the disaster. This is not a scenario that anyone wants to plan for, but the 9/11 attacks showed that it is a possibility. Several corporations in the Trade Center lost senior managers, IT managers, and technical personnel. Others needed to bring in additional personnel to replace surviving employees who were so traumatized they had trouble functioning.

From this perspective, it is important to keep the disaster plan simple and easy to follow, and to ensure that it is not dependent on the expertise of particular staff members. Planning for emergency staffing is also critical. While large companies may be able to afford to hire skilled temporary workers or bring in employees from other offices, most libraries will need to rely on cross-training of staff and/or reciprocal arrangements with other libraries, who would provide staff to assist in the event of a major disaster.

Lessons Learned: Redundancy of Resources

The second major issue consistently emphasized by those who directly experienced the September 11th attacks and the anthrax outbreak was redundancy of resources, both information technology and "traditional" paper resources.

Businesses that had up-to-date off-site backups that could be quickly mounted on new equipment at a hot or cold site, as well as those who had real-time mirroring of data were able to be up and running fairly quickly. Others, however, did not have up-to-date backups and had to spend months reconstructing data.

Fortunately, the libraries and other cultural institutions affected by the attacks did not

experience serious losses of automated catalogs or other large databases. It is worth noting, however, that only 60% of those responding to the survey of lower Manhattan cultural institutions had a current collection catalog or inventory. More than half of those who responded kept no off-site record of their inventory. If these institutions had suffered greater damage, it would have been very difficult to document damaged or lost collections.

Although the majority of cultural institutions in lower Manhattan were spared serious damage to collections and collection records, cultural institutions (like many other businesses) felt the loss of non-automated but essential resources that they used every day to do their jobs. Most had not anticipated either the immediate or the long-term effect of the sudden loss of access to their workspaces, and wished that they had kept duplicate materials off-site.

Consider what materials your staff would need to maintain essential services if they could not return to their offices for weeks. Duplicates of these should be stored in an off-site location. Specific items to consider include:

1) Lists of home telephone numbers and home email addresses for staff. If these existed, they were located in inaccessible buildings and up-to-date copies were not maintained off site. For example, in the immediate aftermath, the Borough of Manhattan Community College library staff had trouble reaching employees using out of date lists that did not include home email accounts.
2) Critical passwords, account numbers, ID numbers, vendor contact information, etc. Pentagon library staff needed their lists of vendors and passwords for electronic databases. AMI library staff missed their Rolodexes and contact information for other newspapers.
3) Shelf lists and in-house indexes. AMI librarians were able to partially reconstruct their collections, but wished for a duplicate of their self-produced index to the bound volumes of back issues.
4) Basic reference materials needed for day-to-day work. These would include dictionaries, atlases, almanacs, etc. Difficult to find volumes on specific topics should have priority.

While the events of 9/11/01 highlighted the effectiveness of regular backup of information technology resources, it also highlighted those essential items (both paper and computer resources) that may fall through the cracks. Approaching disaster planning from a business continuity perspective may help to minimize this problem.

Lessons Learned: Practice, Practice, Practice

Another issue that surfaced repeatedly in accounts of 9/11/01 experiences was the importance of training staff and practicing disaster response procedures.

Pentagon Library staff reported that the monthly fire drills, bomb drills, and evacuation drills that had been conducted were helpful in keeping staff calm when their designated evacuation route was filled with smoke and fire. They also noted that the extensive emergency training received by military personnel was of great assistance. Similar observations were made of emergency workers at the World Trade

Center complex who assisted in evacuations prior to the collapse of the towers.

The more staff training sessions and drills you hold, the better prepared your institution will be to respond to a disaster.

Lessons Learned: Caring for Employees

The experiences of all involved in the events of September and October 2001 showed that planners must consider how the institution will respond to the traumatic effect of a disaster (whether large or small) on employees.

Several New York companies, particularly those that lost employees in the attacks, found that their surviving employees had difficulty functioning due to the trauma. Some workers who had been evacuated from the World Trade Center and the surrounding area could not bring themselves to return at all. Pentagon Library staff reported that the military's system of counseling sessions proved very helpful. As of spring 2002, counseling sessions were still ongoing, offered on a weekly basis. As might be expected, there were different reactions among staff; some were ready to move on quickly, while others were not.

Clearly, an awareness of potential resources for counseling after a disaster is an important piece of a disaster plan. In a large or widespread disaster, counseling is usually easily available from outside or internal agencies, but it is also important to recognize that even a smaller emergency can traumatize staff members. Staff should always be encouraged to seek counseling if they feel it is needed.

The Indefinable Ingredient: Be Prepared to Advocate for Your Institution and Collections

While lists and procedures are crucial parts of a disaster response plan, a successful recovery may hinge on activities that cannot so be so easily quantified. The experience of the Pentagon Library is a case in point.

As related at the FLICC conference of April 2002 by those involved in the recovery, the library staff was denied access to the library because of its designation as a crime scene. By the time staff was able to peek in the windows a few days later, condensation could be seen on the interior of the windows (a sign of high humidity and an indication that mold growth was likely).

Knowing that the collections were in danger, library staff lobbied continually for release of the site for structural review, a step that had to be taken before recovery could begin. The staff worked with a disaster recovery company to map out the collection from memory and deduce what might be happening within the library, producing a report that could be presented to officials. Arguments were made that loss of Department of Defense materials in the library to mold damage would be disastrous. Staff believed that without this constant lobbying, the recovery delay would have been much longer and the damage to collections much worse.

Library staff was also called upon to advocate for the collections when the contracting office requested that they use a standard office recovery service (which was being used for other offices within the Pentagon) to recover their collections. By being prepared to cite the special services

and equipment needed to do the job properly (e.g., freezing chambers, equipment to remove soot from computers, servers, and microfiche), the library was able to contract instead with a recovery service experienced in the recovery of library and archival collections.

While it is generally not practical in the context of the federal government to contract ahead of time with a disaster recovery company, it is wise to be familiar with the companies that are experienced in salvaging library collections (there are only a few throughout the country; see Appendix B for information) and, most importantly, to talk to them ahead of time about your institution and collections. It is much more likely that a company will go the extra mile for your institution if you have shown interest in them beforehand.

Overall, the Pentagon Library's experience shows that it is crucial for staff members to educate themselves so that they will be prepared to argue successfully to their superiors for whatever is needed to recover the collections successfully.

Introduction to Disaster Preparedness

The title of the first publication, *Disaster Preparedness Workbook for U.S. Navy Libraries and Archives* was the subject of some considerable discussion. When we hear the word "disaster," we tend to think of those devastating floods, hurricanes, earthquakes, and other calamities that make news headlines. Without a doubt, every cultural institution should have a plan that allows it to brace against such events. This we changed the title to, *Disaster Preparedness Workbook for Cultural Institutions Within the Military.*

But libraries and archives are bedeviled by everyday assaults: leaking roofs, dripping pipes, a moldy book returned by a patron, a small fire set in the book return, a window left open during a night of pouring rain. Library and archives personnel regularly deal with those little crises--often "making it up as we go along," meeting each such emergency with a shortage of information and an abundance of intent to do the right thing.

After Italy's Arno River flooded its banks and devastated cultural treasures in Florence in 1966, the field of disaster preparedness gained significant attention. The phrase "disaster preparedness" took hold in the profession's consciousness.

For at least a decade, preservation professionals have tried to change the language -- to speak, instead, of "*emergency* preparedness." The effort was not simply semantic. It grew out of a desire to stress that our preparedness activities should not be focused on the rare cataclysmic events, but that we should work to prevent and--failing that--deal effectively with the routine emergencies that all too regularly beset most institutions. The terminological coup failed, though. For better or worse, we continue to use the phrase "disaster preparedness." This workbook does not attempt to turn that tide.

Disaster preparedness is used here as the comprehensive term that describes strategies employed to protect library and archival collections from any unexpected or accidental loss from external causes. Sometimes these are minor, such as those resulting from leaks in the roof or plumbing system; other times they are major floods, fires, earthquakes, and the like. Disaster preparedness includes three facets: protection, recovery, and planning.

Disaster preparedness is a natural part of responsible custody. Few librarians and archivists realize the value of their collections. In a modest base library with a 10,000-volume circulating collection, the average purchase price may be just $35 per volume, yielding a collection value of $350,000. In an academy library, the average price for a hardcover book will be closer to $50. With a collection size of 100,000 volumes, the collection value would be approximately $5,000,000. Special libraries--with a large component of technical and scientific subjects--have even higher average costs. None of these figures, though, includes the costs of acquiring, cataloging, and preparing materials for the shelf--costs that often far exceed the purchase price.

Tailor those examples to your own collection and present the results of your administration. Once administrators realize the collection is a major capital asset, there may be more support for implementing the

protection and maintenance strategies that are necessary.

Of course, many collections are not replaceable at any price. Archives, manuscripts, works of art, and many rare books are gone forever if they are lost in a disaster. Research library collections are built over time, making replacement problematic. Consider making a security copy of irreplaceable, highly valuable, and rare materials in the collection. Microfilm is the best medium for such copies, but the film must be manufactured, processed, and stored according to national standards and preservation guidelines.[1] A digital copy, while providing many access benefits, does not have the requisite longevity.

[1] Key guidelines are provided in Nancy E. Elkington, ed., *RLG Preservation Microfilming Handbook* (Mountain View, Calif.: Research Libraries Group, 1992); Nancy E. Elkington, ed., *RLG Archives Microfilming Manual* (Mountain View, Calif.: RLG, 1994); and Lisa L. Fox, *Preservation Microfilming: A Guide for Librarians and Archivists*, 2nd ed. (Chicago: ALA, 1996).

The Elements of Disaster Preparedness[2]

Protection involves activities taken to prevent or minimize damage to collections. It requires, first, that a repository assesses its vulnerability to floods, earthquakes, hurricanes, and other natural disasters, and to incidents such as roof leaks, plumbing malfunctions, fire, and mold outbreaks. Second, it includes actions to prevent or reduce the impact of disasters. Preventive work takes a variety of forms: installing fire detectors and sprinkler systems, bracing shelves to resist earthquake damage, regularly maintaining plumbing and drainage systems, and storing collections in areas unlikely to sustain water damage from natural or manmade disasters. The "Prevention/Protection Plan" section of this workbook and several of the appendices provide guidance on this element of preparedness.

Recovery begins after a disaster has occurred and involves three stages: response, salvage, and rehabilitation. In the *response* stage, the staff organizes the recovery project by notifying necessary personnel, procuring supplies and services for recovery, stabilizing the building's environment, and assessing the damage. The *salvage* stage involves packing and removing materials from the affected site, stabilizing them (most often through freezing), and drying them by any of a variety of processes (including air-drying, dehumidification, and vacuum thermal- or freeze-drying). The *rehabilitation* or *restoration* stage includes such steps as

[2] Much of the information in this section is drawn from Lisa L. Fox, "Management Strategies for Disaster Preparedness," in *The ALA Yearbook of Library and Information Services*, vol. 14 (Chicago, ALA, 1989), pp. 1-6.

cleaning, fumigation, repair, rebinding, affixing new labels and plates, reshelving, rehousing archival materials, and deodorization and removal of smoke or soot. Rehabilitation of non-paper materials such as photographic and magnetic media often involves reprocessing and/or copying the salvaged item onto a new, stable medium. Much of the text in this workbook provides guidance for recovery operations.

Planning is the third element of disaster preparedness and the most critical. It overarches protection and recovery. In this activity, discrete lists of facts, resources, procedures, priorities, and options are brought together to form a coherent working document that will guide policy and action not just in a disaster situation, but on a day-to-day basis. The disaster plan should include such informational components as floor plans, lists of suppliers and other resources, personnel directories, insurance and accounting instructions, and various checklists. Perhaps more important, it should serve as a guide for the staff in recovering from disasters of various magnitudes, and it should include instructions and procedures that will be relevant in various scenarios. That is, it should reflect in some detail the repository's plans for coping with incidents ranging from small water leaks to mold outbreaks to devastating fire or natural disaster.

The Planning Process

Over the past forty years, an increasing number of institutions have developed documents that list critical phone numbers, supply sources, and service providers. Too often, those documents are the result of one individual's work, and other staff members are scarcely, if at all, aware the document exists. In other cases, the parent organization's safety unit may have plans that govern the institution's response to emergencies in the repository, but the librarians and archivists do not know about them.

To be truly useful, appropriate people and units must be involved in the development of the disaster plan. Though resource lists are a good beginning, a good disaster plan goes further: it documents the institution's thinking about strategic goals, procedures, and task assignments for all elements of the disaster preparedness program. Perhaps most of all, the plan should be incorporated into the day-to-day operation of the organization. The disaster preparedness plan should be a "living document" that all staff know about and apply whenever collections are threatened or damaged.

Here are the steps typically involved in developing a disaster plan for libraries and archives. These steps do not have to happen in the order listed below.

- Assign responsibility. The repository head must authorize the disaster preparedness project. In most cases, it is useful to employ a committee or task force, but one person must be in charge. If one person is acting alone, it is all too easy to let disaster preparedness activities slip to one side. However, if several

people are working together, they often motivate one another to continue the activity; for if deadlines for action are set, each participant will feel pressure to deliver on assignments. Generally, the person in charge should be a manager, and s/he must have skills in project management and group facilitation.

- Establish contact with relevant emergency management units. The fire department, security and safety units, and risk management offices may help educate the staff. You need to learn what support they can offer and what plans they have in place, and they need to understand the library/archive's particular concerns.

  Early in the process, find out what other plans exist that may affect or be affected by yours. It is likely that your repository is part of a base, academy, or other larger organization. Identify and establish a working relationship with the officer in charge of emergency preparedness for the overall organization.

  If your repository is part of a larger organization, that organization probably has a written disaster plan. However, the planners may have a quite different idea than you do of what responsibilities the repository staff will have in the event of a large-scale disaster. When a university library began its planning, the planning committee discovered the university's master plan called for library staff to be detailed to the medical response team in case of a significant earthquake, quite ignoring that some personnel should work on salvaging library materials.

- Educate the planners. Unless the planners already have expertise in disaster preparedness, they will need some time and education in preparation for the assignment. This workbook provides much information they will need, and the readings in Appendix T will supplement it. State libraries and archives, regional bibliographic networks, and other organizations listed in Appendix B may provide workshops that will help also.

  Perhaps worse, the institution's planners may have given no consideration at all to the repository's needs. One repository found that municipal administrators had placed the library and archives at the bottom of the priority list--not through conscious decision-making, but because they had never stopped to calculate the value of those collections and the costs of replacing or salvaging them.

  Take this opportunity to make the organization's emergency planners aware of the importance of the collection. Explain the unique issues involved in salvaging documentary collections, and enlist their commitment to help save the materials.

- Define the scope of the plan. It may be prudent to adopt a "phased" planning process--that is, to focus first on your greatest vulnerabilities, as suggested in "Managing the Planning Process" below. Decide which elements of the plan you will develop in this phase of the planning process and which must wait.

- Develop planning parameters. Establish goals and benchmarks so you can monitor progress and have tangible accomplishments throughout the process. Set a schedule for reporting to the repository director.

- Determine and rank potential hazards. The inspections and assessments outlined in the "Prevention/Protection Plan" and in the "Inspection Checklist" (Appendix M) are key elements of disaster preparedness. As you conduct your planning, you may discover some conditions that increase your vulnerability to disaster (for example, lack of sprinklers or other automatic fire suppression) and others that will complicate your recovery efforts (e.g., the presence of asbestos that could be dislodged in an earthquake, fire, or structural collapse).

  Such discoveries require two avenues of action. First, seek to remedy the problem--for example, by installing sprinklers, conducting asbestos abatement, and so on. Second, and especially if you cannot provide such remedies, make sure your plan realistically reflects the vulnerabilities you discover.

- Consider financial implications. The planning group must know what funds are available for disaster preparedness and especially what will be available for recovery. If the organization is self-insured (as most Navy libraries are), there may be no provision for recovery funds. It may be possible to change that situation if you educate resource allocators about the fact that recovery is generally much less expensive than replacement.

- Write the plan. The templates in this workbook will simplify the writing. However, many conversations will be required to decide on the content of your plan. For example, many staff members should be involved in setting collection priorities. You will need to get information and coordinate planning with outside units--the fire department, security staff, health and safety office, and so on--in order to shape your plans.

- Distribute the plan and train staff. All personnel should understand their responsibilities for basic response actions such as evacuation. In the event of a disaster, they may also have duties such as packing wet records, rinsing muddy books, air-drying materials, rinsing and drying photographic materials--tasks for which their professional education never prepared them. Hold in-house workshops to teach the procedures, and be sure that staff are cross-trained.

- Test the plan and revise it as needed. In the first year after you develop your plan, three or four tests may be needed to determine the feasibility of your plan for the various scenarios it covers (roof leak, fire, earthquake, etc.). Once the plan is well established, conduct fire drills at least annually. It is most important to conduct drills related to disasters that occur infrequently but present a high risk for collection damage, such as earthquakes or fires. In most institutions, there will be plenty of real cases of minor water damage so that you will have ample opportunity to test and refine your plans for those.

- Document and assess the planning process. Identify what problems you encountered, what tactics and resources were most helpful, and so on. To the extent possible, put those in writing and include them in the introduction to your plan as an aid to future planners.

Managing the Planning Process[3]

That outline of planning activities may sound overwhelming. The best course of action is this: focus your work on the issues that are most important to your repository. You can facilitate the planning by using these principles:

- Solicit broad-based participation in the planning process.
- Integrate disaster preparedness into the organization's other, routine operations.
- Adopt a phased implementation process.

Participation

The "Lone Ranger" approach seldom works in disaster planning. Many disaster plans have evolved from one individual's awareness that the library or archive is vulnerable to disaster. While many such disaster plans exist on paper, few have an impact on the regular operation of the organization. Stipulated schedules for roof inspections are not followed, in-house recovery supply stockpiles are not maintained, insurance policies are not updated, and fire safety recommendations are not implemented.

The basic failure of disaster plans developed by "Lone Rangers" arises primarily from lack of participation. Because other staff members are not given an opportunity to develop a sense of "ownership" of the disaster preparedness effort, they develop no sense of responsibility for its success.

An effective disaster plan must reflect hard choices. Many of the questions cut to the heart of institutional priorities and staff allegiances: Which will we save first--the reference books or the special collections? Who will have direct authority for directing the recovery effort--the director or the preservation officer? Should our capital budget proposal include a new sprinkler system or an upgrade for our online catalog?

Such questions are difficult to answer, and they require broad-based input from the staff. If the plan is to work, such questions must be faced directly, and voices on all sides must be heard. The dialogue must include administrative, professional, and support staff. The plan should reflect the perspectives of bibliographers and reference staff, catalogers and processors, circulation and loan services personnel, media specialists, information managers, and all technical and public service units. Each staff member has a unique perspective on the collection and its users, and each can play a valuable role in disaster preparedness.

Others beyond the walls of the repository must help shape the disaster preparedness program. The base command, fire department, security, health and safety, and other relevant units must be included. They may have disaster plans or resources that can be shared, and the repository's plan must be compatible with theirs.

[3] Much of the information in this section is drawn from Lisa L. Fox, "Management Strategies for Disaster Preparedness," in *The ALA Yearbook of Library and Information Services*, vol. 14 (Chicago, ALA, 1989), pp. 1-6.

You can employ the integrative approach by coordinating collection development or assessment activities with the establishment of salvage priorities. Disaster specialists have long urged librarians and archivists to set salvage priorities--that is, to identify those parts of the collection that must receive attention first, second, and third during disaster recovery. However, few repositories have actually set such priorities. Planning for salvage tends often to be avoided, even in repositories that have a fledgling disaster plan. Resistance to articulating salvage priorities can be reduced by integrating this activity into an overall collection management plan. It may be useful, while conducting a collection assessment or developing a collection development policy, to ask: What parts of the collection are most important in the long term and which are most crucial to our daily operations? Discussion of these issues can bring collection development priorities into sharper focus and lead to articulation of salvage priorities. Of course, the final decision about whether a particular institution will give first priority to collections with immediate value or to those with long-term research significance will depend on the collection mission.

Only through seeking broad-based input and discussion (even heated debate) will the final product be a disaster plan that the staff and whole base or institution will support. And only then will the plan be a workable document that does not gather dust in the files.

Integration

Disaster preparedness activities must be integrated into ongoing operations. Effective disaster preparedness must be viewed as only one component of the organization's overall planning and activities.

Space planning provides another opportunity to integrate disaster preparedness into more traditional activities. When a repository plans new construction, renovation, or rearrangement of existing space, disaster preparedness merits consideration. For example, significant collections can be moved out of basements and away from windows to reduce their vulnerability to floods or hurricanes. When acquiring new shelving, organizations can procure units with a canopy and with lowest shelves four inches off the floor--thus affording some protection from water. To reduce the risk of arson, book returns that open into the library can be enclosed or replaced with freestanding units away from the building.

There are other simple ways to integrate disaster preparedness into day-to-day activities. Various ongoing prevention measures can prevent disasters or minimize their effects. Staff responsible for closing the building can check to see that all windows and doors are closed and securely locked. Workers in technical services departments can routinely put important records (on-order and in-process files, collections being arranged and described) in cabinets at the end of the day, rather than leaving them on desktops where they are more vulnerable to water, fire, and other damage. Step stools in stack areas can be marked with phosphorescent tape so they will be more visible in a darkened or smoke-filled building. Individually, none of these strategies are particularly difficult to implement, and together they can be important building blocks in the disaster preparedness program.

Phased Implementation

Too many librarians and archivists have acted as if no disaster preparedness activity can begin until the entire disaster plan is in place. Others who have learned how far-reaching and complex the subject is have, despite their good intentions, simply left it undone. Both attitudes fail to recognize the benefits of phased disaster preparedness. Any single step taken to protect the collection from damage is a valid achievement toward the goal of disaster preparedness. Planners need to segment the job into manageable tasks, phasing in each step over time as the staff gains more knowledge and commitment.

Too many written disaster plans are never incorporated into the institution's real goals, plans, and operations. Budgeting, formal designation of staff responsibility, and ongoing staff training and support must be dealt with. In preparing a disaster plan, staff must frequently ask, "How will this be achieved so that the plan will be a feasible one for us?" The planners must articulate a strategy to ensure that the disaster preparedness plan is actually implemented and receives ongoing attention. If obstacles are unseen or dismissed in the planning stages, the staff becomes disheartened when the disaster plan is not met with instant acceptance. By acknowledging and identifying difficulties in the early stages, planners can increase the staff's eventual support of the disaster preparedness effort.

Employing a phased strategy, one institution may begin by implementing such protective measures as regular roof inspections and preventive maintenance or by shifting collections so that lower shelves are not used. This may be especially prudent in a building that regularly experiences roof leaks or plumbing malfunctions. Or that same institution might initiate its disaster preparedness effort simply by developing resource lists of suppliers, services, and experts to call when the collection sustains damage. Another organization might begin by identifying salvage priorities.

Eventually, such discrete steps will build toward a coherent disaster preparedness plan. In the meantime, these individual actions will have begun educating staff, developing an organization-wide sensitivity to disaster preparedness issues, and cultivating a belief that progress can be achieved.

In developing a successful implementation plan, staff must recognize that disaster preparedness is difficult because *all* organizational change is difficult. Some elements of disaster preparedness will challenge such long-standing attitudes as "we'll never experience a flood," and such ingrained habits as leaving fire doors open or smoking in the building. Specific plans must be laid to motivate and educate the staff so they will support changes that accompany authentic disaster preparedness.

Where to Begin?

Every Cultural Institution is encouraged to develop a full disaster plan using this workbook, and that is a worthwhile goal. However, no institution can do everything at once, and phased implementation is a valid approach.

For most institutions, these activities should receive first-priority attention:

- Pre-assign recovery responsibilities. Be sure every staff member knows his or her

assignments in the event of a disaster and that there are adequate back-ups for each position. Detailed job descriptions are provided here in "Background Information for Appendix A1: Disaster Team."

- Establish salvage priorities. The "Salvage Priorities" section of this workbook recommends a process for setting priorities within various units. It is generally easiest to develop unit priorities (by department, floor, etc.) first, and record them on the form in Appendix P, Salvage Priorities--Detailed. Then select among those to develop overall priorities for the repository.

- Develop and maintain resource lists. The templates and lists in Appendix B provide a starting point.

These are the next most critical activities for a typical repository:

- Educate and train staff. Readings will help provide basic information, but for developing skills in salvage, there is no substitute for hands-on training. Conducting "mock disasters" will develop skill and help identify areas where written plans may be unclear or need revision.

- Document recovery procedures. You may be able to use the instructions in the "Salvage Procedures" section and Appendix Q of this workbook with little modification. Other resources cited in the Bibliography (Appendix T) provide guidance for more specialized collections.

- Implement disaster prevention strategies. It is a truism that "an ounce of prevention is worth a pound of cure," but any veteran of a library or archives disaster will confirm that prevention and protection--however arduous and expensive--are much preferable to recovery. Whatever you can do to implement protection strategies will reduce the likelihood that you will be called upon to stand knee-deep in mud, ashes, or rubble to salvage collections after a hurricane, fire, earthquake, or other disaster. The "Prevention/Protection Plan" section of the workbook, along with the Inspection Checklist in Appendix M, provides a starting point.

There are many diverse ways to tackle the work of disaster preparedness. Anything you do to prevent a disaster, reduce its impact, sensitize or train the staff, or organize recovery resources will be helpful. This workbook provides a solid base for your work.

In the event of an actual disaster, the workbook also provides guidance on actions to take in handling a disaster. Remember:

Safety First! Before entering a disaster damaged building, it would be wise to review Appendix D1, "Health and Safety Universal Precautions for Post-Flood Buildings." Books and materials can be replaced. The same cannot be said about human life. This must always be a repository's first priority.

Cover Page

DISASTER PREPAREDNESS PLAN

Name of Organization:

_____

Date of Plan Completion:

_____

Next Scheduled Update:

_____

Set a date no more than 12 months in the future by which the plan should be updated.

Distribution:

List all individuals or offices that receive copies of the plan (including those within your organization or base as well as outside units such as the fire department and security office) and locations of file copies. Use this list to be sure everyone who receives the disaster plan also receives a copy of updates.

Certain personnel should keep copies of the plan at home as well as in their offices, in case they are called into action outside business hours. Include those in this list. The person who created the plan should be listed first.

It is also a good idea to include the plan, or relevant sections of it, with your disaster stockpile. See the recommendations in Appendix B.

_____

_____

_____

_____

_____

_____

Introduction to the Plan

Prepare a brief introduction to your plan. You might include the following points:

- *when and by whom it was prepared;*
- *the purpose of the plan;*
- *how the repository's plan relates to the overall disaster plan for the entire base, academy, etc.;*
- *when and by whom it is to be updated; and*
- *how the plan is organized and tips on using it.*

If your hazard assessment, reflected in the Inspection Checklist (Appendix M), reveals any areas of particular concern, you might highlight them here.

Emergency Instructions

Use this section to provide brief instructions about how to respond to the emergencies that are most likely to occur, given your locale and the particular features of your building. The form in this section provides templates for a wide variety of emergencies; delete any that are unlikely to occur in your area.

Write the instructions so that staff without training or supervision can carry them out correctly. Make the instructions as brief as possible. The "Emergency Response and Salvage Wheel," cited in Appendix T, may be posted in conjunction with these Emergency Instructions.

Post a copy of this sheet near all staff telephones and at the primary contact points (e.g., the reference desk and circulation desk). Also include a copy of this summary sheet in the plan.

The first priority in any collection-threatening emergency is to preserve and protect human life. In applying the emergency instructions, focus on the safety of staff, patrons, and other people in the building, and do only as much as is safe and prudent to protect the collections.

Fire

If your facility is equipped with automatic detectors and/or sprinklers, this template should be revised to include information on how staff should respond when those systems are activated.

1. If you see fire or smell smoke, activate local fire alarm by pulling nearest manual alarm or calling 911.

2. Determine the location and source of the fire, if that can be done quickly and safely, but not if it will delay evacuation.

3. Call the Fire Department, _____, and provide what information you have about the fire. *[Insert 911 or other phone number. Some libraries may require notification of local security personnel in addition to or instead of the Fire Department.]*

4. If fire has less than a 3-foot base and is not chemical, you may attempt to put it out using an ABC fire extinguisher, if you are properly trained in its use.

5. If fire is larger than a 3-foot base, immediately evacuate the building and await arrival of fire authorities to inform them of the status. Detailed instructions and responsibilities are provided in Appendix I, Evacuation.

6. **Do not jeopardize safety to accomplish these tasks.** If possible and safe to do so, take the following other actions: *[You may specify instructions such as turning off equipment, shutting windows and fire doors, etc.]*

_____

_____

_____

7. From a safe location, notify the following staff of the event:

Name/Title	Office Phone	Home Phone/Beeper

8. Follow detailed instructions located in the disaster plan, pages _____ *[insert page/section number(s)]*, a copy of which is kept _____ *[tell where]*.

Water

In routine emergencies, clean water may leak into collection areas. If there is any risk that the water is contaminated by sewage or other substances, responders should wear protective clothing (waterproof boots, clothing, and gloves). If there is any risk of electrocution, **do not enter the area**.

1. If easily done, attempt to determine the cause or source of the water.

2. Attempt to cut off water if feasible. The location of water shut-off valves and procedures for closing them are given in Utility/System Malfunctions (Appendix R).

3. Call, in the following order, and give exact location of the problem: *[It may be appropriate to list a plumber or the head of building maintenance. Some installations may also want the security office notified.]*

Name/Title	Office Phone	Home Phone/Beeper

4. If collection materials are threatened by water, immediately notify _____ *[specify Recovery Coordinator or other person; provide name, office phone, and home phone]* or his/her designated back up, _____ *[insert name, office phone, and home phone]*. If neither is available, call in the following order:

Name/Title	Office Phone	Home Phone/Beeper

5. Protect the collections while awaiting assistance. Choose (a), (b), or (c), depending on the situation:

   a. If only a few items are in jeopardy and the water flow is minor, move any wet or vulnerable materials to a dry, secure location nearby.

   b. If water is coming from above, get plastic sheeting located in _____ *[give location]* and use it to cover affected areas, stack ranges, cabinets, shelves, etc.

   c. If water is coming in on the floor, get book trucks or dollies located in _____ *[give location]* and remove materials from affected area, beginning with those in lower drawers/shelves, and move them to a safe location that will not be subject to flooding.

6. Follow detailed instructions located in the disaster plan, _____ *[insert page/section number(s)]*, a copy of which is kept _____ *[tell where]*.

Utilities/Systems Malfunctions

1. In the event of an emergency related to utilities (gas, electricity, water, etc.) or systems (HVAC, sprinklers, etc.) during regular business hours, contact the following:

Name/Title	Office Phone	Home Phone/Beeper

2. After hours, at night, on weekends and holidays, the following staff are authorized to initiate a service request:

Name/Title	Office Phone	Home Phone/Beeper

3. The following other contacts may be made as necessary: *[You may list here some of the more common problems and the person/office to contact (e.g., utility companies, maintenance staff, etc.), reproduced from "Utility/System Malfunctions" (Appendix R).]*

Problem	Contact	Office	Home Phone/Beeper

4. The location of emergency shut-offs and procedures for operating them are given in Appendix R, Utility/System Malfunctions, of the disaster plan, a copy of which is kept _____ *[tell where]*.

Tornado

1. Evacuate staff and visitors to one of the following locations: *[Consult with Civil Defense or other local safety officials to predetermine appropriate areas to include here.]*

_____

_____

_____

2. Remain in shelter until radio announcement or _____ *[insert name of authorized staff member]* declares it is safe to emerge.

Hurricane Warning

1. Immediately notify the Recovery Coordinator, _____ *[insert name, office phone, and home phone]*.

2. Begin to implement hurricane preparedness plans in the "Response Procedures: Hurricane" section of the disaster plan, a copy of which is kept _____*[tell where]*.

Bomb Threat

1. Keep the caller on the telephone if possible and gather information noted on the Bomb Threat Report Form located in Appendix C of the disaster plan.

2. Immediately call the Police Department at _____, or have someone else call for assistance as soon as possible. *[Some installations may have procedures that require notifying security personnel rather than the Police Department.]*

3. Await instructions from the Police Department. Only evacuate the building as they order it. Evacuation should be implemented by the police, not staff, so that the police can check evacuation routes for bombs. Also staff should be instructed NOT to pull the fire alarm, since no audible alert is preferred.

Civil Disturbance or Riot

1. Immediately notify _____. *[Specify security office, police, or other appropriate unit.]*

2. Take the following steps to safeguard people in the building: *[Consult with local security personnel to determine what steps are prudent--e.g., gathering people in a safe area within the building, evacuation, etc.]*

   _____

   _____

   _____

3. If _____ *[specify Chief Administrator or appropriate other staff]* determines that fire, water damage, or other damage to the collections is likely, the response plan will be initiated.

Explosion in the Building

1. Remain calm. Evacuate the building as quickly as possible. See instructions under Evacuation (Appendix I). Do not use the elevators.

2. Stay away from windows, mirrors, or anything that might fall on you. If items are falling, take shelter under sturdy furniture.

3. Avoid using the telephone (except in a life-threatening situation) and do not use matches or lighters, in case of a gas leak.

4. If there is a fire, stay low to the floor and cover your nose and mouth with a wet cloth. Feel any closed doors and do not open them if they are hot to the touch.

Chemical Attack or Accident

1. If you witness a suspected chemical attack or accident, immediately notify _____ *[Specify security office, police, or other appropriate unit]*.

2. If you are outdoors, move away from the area as quickly as possible. If you cannot leave the area, try to get inside, away from direct exposure.

3. If an attack or incident occurs outdoors while you are inside your building, _____ *[Specify Chief Administrator or other appropriate staff with access to official information in the event of an area emergency]* will recommend whether staff should shelter-in-place or evacuate the building.

4. If an attack or incident occurs inside your building, evacuate the building if possible. If evacuation is not possible, move to a location in the building as far from the affected area as possible and shelter-in-place.

5. If the use of personal protective equipment (PPE) has been implemented by your agency, the location of this equipment and instructions for use are as follows *[Provide this information as appropriate; delete this item if it is not applicable]*:
   _____
   _____
   _____

6. If you are instructed to temporarily shelter in the building:

   a. Seal all openings to the extent possible (e.g., close and lock windows and doors; turn off HVAC systems, close vents, and turn off fans; close fireplace dampers). See Appendix R for the protocol for shutting down the ventilation system.
   b. Gather all staff in the following location: *[Consult with local safety officials to predetermine a safe location in the building]* _____
      _____

c. Fill sinks and containers with water in case the water supply becomes contaminated.
d. Listen to a battery-powered radio for further information.

7. If you are instructed to evacuate:

    a. Evacuate the building according to the instructions in Appendix I. Follow the instructions of local authorities after leaving the building.
    b. Seal the building to the extent possible (as described above) if there is time before leaving.

8. If you suffer symptoms from a chemical attack or accident, try to remove any clothing you can and wash your body with water or soap and water if available. Do not scrub, as this may wash the chemical into the skin. Seek medical assistance as soon as possible.

Biological Attack

1. If you witness a suspected biological attack or accident, immediately notify _____ *[Specify security office, police, or other appropriate unit]*.

2. If feasible, leave the immediate area as quickly as possible, placing a layered material such as a t-shirt, handkerchief, or towel over your nose and mouth. This may help keep you from inhaling particles of the substance.

3. If the use of personal protective equipment (PPE) has been implemented by your agency, the location of this equipment and instructions for use are as follows *[Provide this information as appropriate; delete this item if it is not applicable]*:
    _____
    _____
    _____

4. In the event of an attack, _____ *[Specify Chief Administrator or other appropriate staff with access to official information in the event of an area emergency]* will recommend whether staff should shelter-in-place or evacuate the building.

5. If you are instructed to evacuate the building, see Appendix I for detailed instructions. Follow the instructions of local authorities after leaving the building. Seal the building to the extent possible if there is time before leaving (see #6 below for instructions).

6. If you are indoors and the attack occurs outdoors, you may be instructed to shelter in your building. Take the following steps:

a. Seal all openings to the extent possible (e.g., close and lock windows and doors; turn off HVAC systems, close vents, and turn off fans; close fireplace dampers). See Appendix R for the protocol for shutting down the ventilation system.
b. Gather all staff in the following location: *[Consult with local safety officials to predetermine the safest location in the building]*

   _____

   _____

c. If you suspect that the water supply may be contaminated, boil water before drinking it.
d. Listen to a battery-powered radio for further information.

7. If a biological attack has occurred and you develop symptoms of illness, consult medical personnel immediately and limit your exposure to others, in case it is an illness that can be spread from person to person.

Nuclear Explosion or Radiological Contamination

1. If a nuclear explosion occurs, immediately drop and stay down until any blast wave passes over you and it is safe to get up. Remain down until debris stops falling. Do not look at the blast. When it is safe to do so, seek shelter inside a building or basement. Dirt or earth is one of the best forms of protection from radiation.

2. If you witness a suspected radiological attack (e.g., dirty bomb explosion), immediately notify _____ *[Specify security office, police, or other appropriate unit]*.

3. If you are outdoors, leave the immediate area as quickly as possible for a sheltered area, placing as much distance and shielding as possible between you and the source of contamination.

4. In the event of an attack while you are inside your building, _____ *[Specify Chief Administrator or other appropriate staff with access to official information in the event of an area emergency]* will recommend whether staff should shelter-in-place or evacuate the building.

5. If you are instructed to evacuate the building, follow the evacuation instructions in Appendix I. If it is safe to leave without going in the direction from which the blast came, it is best to try to minimize the amount of time you are exposed to radiation. Once out of the building, follow the instructions of local authorities.

   a. Seal the building to the extent possible if there is time before leaving (e.g., close and lock windows and doors; turn off HVAC systems, close vents, and turn off

fans; close fireplace dampers). See Appendix R for the protocol for shutting down the ventilation system.

b. Place as much shielding and distance as possible between you and the source of contamination. Limit exposure by leaving laterally or upwind from the area.

6. If you are instructed to temporarily shelter in place:

   a. Seal all openings to the extent possible (e.g., close and lock windows and doors; turn off HVAC systems, close vents, and turn off fans; close fireplace dampers). See Appendix R for the protocol for shutting down the ventilation system.
   b. Gather all staff in the following underground location: *[Consult with local safety officials to predetermine the safest location]*

      _____

      _____

   c. Listen to a battery-powered radio for further information.
   d. Do not go outside until you receive instructions to do so—but if you must go out, cover your mouth and nose. When you come in—shower, change your clothing and shoes, and put the items you were wearing in a sealed plastic bag.

Emergency Numbers

Revise this list according to local needs. You may wish also to reproduce it in Appendix B2, "Suppliers and Service Providers."

	Name	Office Phone	After-Hours Phone
Ambulance			
Building Maintenance			
Doctor			
Duty Officer			
Fire Department			
Hazardous Materials			
Hospital			
Police			
Risk Manager			
Security Office			
Security System			
Telephone Co.			
Utilities: Electric			

Utilities: Gas _____

Utilities: Water/Sewer _____

Utilities: Other _____

Prevention/Protection Plan

In this section, record your plans for disaster prevention and hazards reduction. Conduct a risk assessment using the Inspection Checklist (Appendix M) to identify your vulnerabilities and needs before preparing these plans.

Staff awareness is one of the single most important measures we can take toward disaster prevention. Constant vigilance by the staff can often prevent a disaster or keep a minor disaster from becoming a major one.

Every staff member should take the initiative to be a troubleshooter and note problems that may be occurring in the building. Problems such as leaky pipes, cracked windows, toilet problems, or unusual odors (particularly those that could indicate a fire) should be brought to the attention of _____ *[specify maintenance supervisor, Recovery Coordinator, etc.]*. Correcting a problem before it develops into a full-blown disaster can save hundreds of staff hours and thousands of dollars that might otherwise be spent on salvage efforts.

Preparedness Guidelines

1. The _____ *[specify personnel officer or other]* will give a copy of the disaster plan to all new staff members. Supervisory staff will see that new employees read the plan and will help them become familiar with its layout and content.

2. Supervisors will give a tour to acquaint new staff members with the building and point out any building vulnerabilities and relevant details in the floor plans. Supervisors also will review the emergency evacuation procedures and evacuation routes with their staff members _____ *[specify frequency; quarterly is recommended]*.

3. The _____ *[specify Recovery Coordinator or other staff]* will inventory the disaster supply kit(s) at least _____ *[specify frequency; monthly is recommended, but quarterly may be adequate]*, noting the supplies on hand, those stored in locations outside the building, and those that would have to be purchased in case of emergency.

4. The list of vendors and consultants in Appendix B2, Suppliers and Service Providers, will be updated _____ *[specify annual or more frequent updates]* by _____ *[specify Recovery Coordinator or other staff]*. *[You may wish to repeat this information in the introduction to the Disaster Supply Stockpile (Appendix B1).]*

5. The _____ *[specify Recovery Coordinator or other staff]* will review the full disaster plan _____ *[specify annual or more frequent review]*, updating sections as necessary.

6. The _____ *[specify Recovery Coordinator or other staff]* will arrange for inspections using the Inspection Checklist (Appendix M) and work with appropriate staff to ensure that problems are remedied.

Disaster Team Preparedness

1. All disaster team members will keep a copy of the plan at home or in a safe location.

2. When the organization is in a "high alert" status (as when a hurricane watch is issued, floods are predicted, or wildfires are in the area), members of the disaster team may be required to keep the Recovery Coordinator or other staff member informed of their whereabouts and phone numbers on a 24-hour basis.

3. Training. Members of the disaster team will be provided with training to enable them to carry out their responsibilities in a disaster recovery operation. This may range from annual, full-scale disaster simulation drills to periodic workshops. At a minimum, plans must be made for on-the-spot training in the event of a disaster. *[You may wish to document your training plans here or in Appendix A1, Disaster Team.]*

4. Personal equipment. Each member of the disaster team will assemble and maintain a personal equipment kit containing clothing, equipment, and personal items they will need during the first eighteen hours of a disaster recovery operation. Persons who may be called upon to respond to major disasters will require personal equipment for a minimum of 72 hours. *[In the Disaster Team appendix (A1), you may want to note your recommendations and specify whether the organization will pay for employees to purchase items for their kits.]*

   The personal equipment kit should meet staff members' individual needs. A day pack or gym bag may be an appropriate container. The kit should be assembled before the disaster alert. Remember that when alerted for a disaster response operation, staff may need to leave home within 30 minutes or less.

   Clothing should be comfortable and suited for the weather outside. The staff may be working under poor conditions, the environment may be wet and dirty, and personnel

may be working outdoors or in an unheated building. Therefore, do not wear anything that you would mind being damaged. The following are suggestions for the personal equipment list of library/archives staff. Other specialized personnel, such as construction workers, will have different requirements.

Clothing[4]

Long, washable trousers
Jacket
Old flat, closed shoes ***or*** rubber boots
Rubber gloves
Hard hat, regular and/or electrically Protective
Long sleeved shirt
Hats
Socks plus one dry pair in your kit
Work gloves
Large handkerchief
Steel-toed boots

Personal Items

Corrective eyewear
Sun glasses, sunscreen, hand lotion
Tissues and towelettes
Toothbrush/toothpaste
Pocket knife
Container of drinking water
Pencil
Keys
Lip balm
Feminine hygiene products
Prescription medicines, aspirin
Quick-energy snacks
Waterproof flashlight
Battery-operated radio
Small notebook
Disaster Response and Recovery Wheel (See Appendix T)
Other personal needs

Liaison with Other Units

The _____ *[specify Recovery Coordinator or other position]* will meet at least quarterly with officials in the following units:

- fire
- security/police
- health and safety
- maintenance/facilities
- _____
- _____

[4] In the event of wildfire, clothing must be made of all-natural fabrics such as 100% cotton or wool.

Regular communication will further the goals of :

- helping emergency response units minimize damage to collections;
- increasing responders' salvage effectiveness;
- ensuring that the repository understands the incident command system of emergency response units and that the units are aware of the repository's disaster recovery plans; and
- identifying revisions and updates needed in either unit's written plans or operating procedures.

As necessary, the _____ *[specify Recovery Coordinator or other position]* will arrange for training/education sessions for personnel in emergency response units. Objectives of these sessions will be to help them understand how they can minimize damage to collections in their work and what special issues are involved in disaster recovery for library and archival materials.

Emergency Drills/Testing the Plan

The _____ *[specify Recovery Coordinator or other position]* will schedule emergency drills for evacuation of the building _____ *[indicate the frequency of drills; one a month would be ideal, twice per year should be the minimum]*.

The _____ *[specify Recovery Coordinator or other position]* is responsible for scheduling periodic tests ("dry runs") of the disaster plan. Such tests will be carried out on the following schedule *[indicate frequency]*:

_____

_____

_____

Staff Training

The _____ *[specify Recovery Coordinator or other position]* is responsible for conducting training sessions for staff members every six months, to ensure that they are familiar with the disaster plan.

The schedule for staff training sessions is as follows *[depending on the size of your institution, sessions may be held for all staff or by department; indicate when these should take place each year, e.g., January and June]*:

_____

_____

Maintenance Inspections

The _____ *[specify maintenance/facilities department or other appropriate unit]* will identify and inspect all areas and equipment that may cause or be subject to a disaster. These will include areas noted in the Inspection Checklist (Appendix M) that relate to:

a. building structure
b. grounds
c. HVAC system
d. electrical appliances and wiring
e. plumbing and drainage
f. housekeeping
g. Placement of emergency exit signs (lighted)

[If possible, also state the frequency of these inspections, specify that copies of completed inspection reports will be submitted to the Recovery Coordinator, and outline a process whereby the Recovery Coordinator will monitor whether/when action is taken to remedy problems identified in the inspections.]

Fire Safety

The _____ *[specify safety office or other appropriate unit]* will manage the fire safety program. This will include inspection and maintenance of fire protection systems and devices. Activities and inspections will include areas listed in the Inspection Checklist (Appendix M) that relate to:

a. fire extinguishers
b. fire alarm system
c. smoke and heat detectors
d. fire suppression system (sprinklers, Halon, micromist, etc.)
e. liaison with the Fire Department
f. staff training

[If possible, also state the frequency of these inspections, specify that copies of completed inspection reports will be submitted to the Recovery Coordinator, and outline a process whereby the Recovery Coordinator will monitor whether/when action is taken to remedy problems identified in the inspections.]

Further details about the fire safety program are outlined in Appendix J, Fire Safety.

Security

[See the "Disaster Planning for Museums and Historic Sites: Background" chapter of this workbook for a detailed discussion of security systems and precautions; much of this information also applies to libraries and archives.]

The _____ *[specify security office or other appropriate unit]* will manage the security program, in conjunction with _____ *[specify librarian, archivist, records manager, or other responsible position that supervises research use of the collections]* who oversees use of the collections within the facility. This will include inspection and maintenance of security systems and devices, as well as security risk identification and control. Activities and inspections to enhance security will include the following areas of the Inspection Checklist (Appendix M):

a. key control
b. maintenance and monitoring of security devices on doors, windows, and within the building

[If possible, also state the frequency of these inspections, specify that copies of completed inspection reports will be submitted to the Recovery Coordinator, and outline a process whereby the Recovery Coordinator will monitor whether/when action is taken to remedy problems identified in the inspections.]

Storage Areas

The _____ *[specify appropriate librarian, archivist, records manager, etc.]* will ensure periodic inspection of collection storage areas according to criteria listed in the Inspection Checklist (Appendix M). Inspections will give particular attention to:

a. signs of leaks, water damage, etc.
b. signs of mold, insect, or rodent infestation
c. fire hazards

Inspections will include any offsite storage areas used for the collection.

[If possible, also state the frequency of these inspections. Daily inspection is recommended, but weekly may be more feasible. Also note that copies of completed inspection reports will be submitted to the Recovery Coordinator, if that is a different person than the librarian, archivist, or records manager who has responsibility for inspection of the storage areas.]

Protecting Information Technology

Routine backup and offsite storage of computer records is a critical element of disaster mitigation. To the extent that originals or duplicates are held elsewhere, the organization's vulnerability to disaster is reduced.

Detailed information about backing up information technology resources and off-site storage of data, software, and configuration information is provided in Appendix G (Protecting Information Technology).

Chemical, Biological, and Radiological (CBR) Hazards

As a preventive measure, all chemicals and hazardous materials will be stored in OSHA-approved cabinets.

The _____ *[specify appropriate position]* will retain Material Safety Data Sheets (MSDS) as required by OPNAVINST 5100.23d, Chapter 7, pp. 7-10, Paragraph 0708 e(6) and Paragraph 0702, pp. 7-1 to 7-6. See Appendix E (CBR Hazards) for further information about chemicals and other hazardous materials in the building.

The _____ *[specify appropriate position]* will periodically evaluate the building for vulnerability to CBR attacks and take steps to reduce vulnerabilities to the extent possible. See Appendix E (CBR Hazards) for steps that can be taken to protect a building against airborne chemical, biological, or radiological attacks.

Staff Personal Safety Kits

The Federal Employee's Emergency Guide (U.S. Office of Personnel Management, available at www.opm.gov) recommends that all employees (not just Disaster Team members) put together a personal safety kit to store at their workspace, in the event that they need to shelter-in-place. Items to include would be extra doses of medications, bottled water, long-sleeved shirt or jacket, snack foods, an extra pair of glasses if needed, and emergency contact numbers. See the listing of items for the disaster team personal equipment kit for further suggestions.

The _____ *[specify appropriate position]* will be responsible for reminding employees to update their kits every six months. This would be most easily done during a staff training session or emergency drill.

Pre-Disaster Actions

In the event of a disaster with forewarning, staff will initiate the response procedures located in the following sections:

- flood -- see Response Procedures: Severe Storms and Floods
- hurricane -- see Response Procedures: Hurricane
- tornado -- see Evacuation (Appendix I)
- wildfire -- see Response Procedures: Wildfire

Business Continuity Planning

As noted in the introduction to the second edition of this workbook, the events of Fall 2001 and Summer 2005 highlighted the need for cultural institutions to undertake business continuity planning. This phrase refers to the process of identifying an institution's critical users and services, and planning how the institution will continue to provide those services in the face of a disaster that restricts access to the building and/or the collections. Detailed guidance on the preparation of a business continuity plan is beyond the scope of this workbook, but cultural institutions should make this a priority.

The _____ *[Specify Chief Administrator or other appropriate staff]* is responsible for preparing a business continuity plan and updating this plan every six months to reflect changes in the institution.

Response Procedures

Background Information

The response section of your disaster plan should contain all the information needed for fast and effective action. It is important to plan these procedures carefully for several reasons. First, it may be difficult to think clearly in a disaster situation, especially a large-scale one. Second, "Murphy's Laws of Disaster" seem to prevail. The person who knows most about the disaster plan is likely to be unavailable, and significant disasters seem to happen at the worst possible times--especially at night, on weekends, and during major holidays. So the instructions need to be fairly self-explanatory. Finally, the longer materials remain wet, the worse the distortion and damage will be--even after drying.

Before preparing the response section of your plan, spend some time assessing your vulnerabilities. All facilities are vulnerable to fire, mold, and routine water damage, so all should include instructions for responding to those. In addition, tornadoes, hurricanes, earthquakes, blizzards, snow, roof collapses or wildfires may be a danger in your area. Consider the location of your building and nearby flood plains, rivers or creeks, railroad tracks, airport flight paths, or nuclear power station. (Appendix M includes a more detailed list of site hazards.) These will suggest the scope and type of disasters for which you should plan. If you share a building with medical offices, chemical labs, or other scientific units, those might present special problems.

As you develop your response plans, remember to think on two levels. For the most part, staff members will use the plan to respond to small-scale emergencies (such as plumbing breaks or roof leaks) that affect only a small portion of the collection. Also be sure the plan is helpful when large disasters affect the entire collection or even the entire geographic area.

There are some key questions to ask when developing disaster response plans. Others may be added to reflect particular concerns of your own installation, but at least the following should be addressed.

1. **Who will assess the disaster situation: the Recovery Coordinator? Facilities Manager? or someone else?**
2. **Who gets the first call if the problem occurs after-hours? How is the call initiated--through the security office? Directly?**
3. **Which officers and other authorities should be notified? Who does it?**
4. **How is the source of the problem dealt with? What different procedures are needed if the problem is fire, water from above, or rising water?**
5. **What area can be used as a command post inside the building? What locations could be used outside the building?**
6. **What personnel will be available? For how long? Are there reasons some personnel may not be willing or**

able to assist (e.g., physical condition, union contract, etc.)?

7. **How will the disaster team be notified? Where should they convene?**
8. **Who activates plans for acquiring supplies, services, equipment? How will they be paid for? Where are deliveries to be made? What resources are needed in various disaster situations?**
9. **Where are the local/institutional supplies located? How do we get access to them during normal business hours? What are the procedures at night or during weekends and holidays?**
10. **Who checks for hazards (e.g., broken glass, mud, sewage, chemicals, live electricity, etc.) and gives permission to enter the building?**
11. **How will damage be documented? What are the procedures for making a claim under the self-insurance program? If part of the collection is covered by commercial insurance, what documentation does the insurance carrier require?**
12. **How will the insurance carrier or risk management officer be informed? By whom?**
13. **How will the environment (especially temperature and humidity) be monitored?**
14. **How will internal and external communication be handled if the phone system is operational? What if it is not? Who will be responsible for speaking to the media?**
15. **Where can volunteers or temporary employees be obtained? Are there liability issues that need to be addressed beforehand?**
16. **Are there collection materials that can only be handled by people with special security clearance? Are those materials readily identifiable? Have the individuals been identified that can handle these materials?**

The *Emergency Response and Salvage Wheel*, cited in Appendix T, provides generic guidelines for disaster recovery. It can be posted by staff desks, and should be included in each disaster team member's personal equipment kit if possible. The "Response Procedures" and related appendices in this workbook can further tailor your institution's plans.

Response Procedures Water Damage (Routine)

The following procedures are for routine water damage from roof leaks, plumbing system malfunctions, minor flooding, and so on. The first step is to (see sheet). For area flooding and other major water disasters, follow the instructions in "Response Procedures: Medium-to-Large Scale Disasters."

Judgment and experience may lead you to apply these instructions in a different order than listed here. For example, if a minor leak threatens only a single file cabinet, the prudent course may be to move the cabinet out of harm's way before initiating steps 2-6.

1. Attempt to determine the cause or source of the water. If you cannot determine the source, proceed to step 2.

2. Attempt to cut off the water if feasible. The location of water shut-off valves and procedures for closing them are given in Utility/System Malfunctions (Appendix R).

3. Call, in the following order: *[It may be appropriate to list a plumber or the head of building maintenance. Some organizations may also want the security office notified. The fire department may also be equipped and prepared to deal with water emergencies.]*

   Name/Title Office Phone Home Phone/Beeper

   _____

   _____

   _____

   _____

4. If collection materials are threatened by water, immediately notify the Recovery Coordinator, _____ *[insert name, office phone, and home phone]* or his/her designated back-up, _____ *[insert name, office phone, and home phone]*. If neither is available, call in the following order:

   Name/Title Office Phone Home Phone/Beeper

   _____

   _____

   _____

5. Make sure personnel have turned off all electrical circuits in the affected area. **No one should walk through water** until the appropriate safety officer has declared the area safe.

6. If there is any danger of biological contaminants in the water, staff working in the area must wear disposable gloves and boots located in the disaster supply kit. A sample of the water must be taken to determine safety conditions for staff, and to provide information for future conservation of collections damaged by the water.

7. Retrieve the in-house disaster supply kit, located _____ *[specify its location]*.

8. Protect the collections while awaiting assistance. Choose (a), (b), or (c), depending on the situation:

    a. If only a few items are in jeopardy and the water flow is minor, move any wet or vulnerable materials to a dry, secure location nearby.

    b. If water is coming from above, get plastic sheeting located in _____ *[give location]* and use it to cover affected areas, stack ranges, cabinets, shelves, etc.

    c. If water is coming in on the floor, get book trucks or dollies located in _____ *[give location]* and remove materials from affected area, beginning with those in lower drawers/shelves, and move them to a safe location.

9. Remove any standing water with a wet/dry vacuum, located _____ *[specify its location]*.

10. Take steps to reduce the temperature and humidity and to increase air circulation: (Be aware of wooden artifacts or cabinetry if they are involved in the unpatted area).

    a. Measure the temperature and relative humidity using monitoring devices in the supply kit.

    b. Turn on air-conditioning or lower the temperature setting.

    c. Increase air circulation in the affected area by running fans continuously. Caution is advised as increased air circulation may be hazardous if mold has already broken out.

    d. See other environmental control strategies outlined in Appendix D1, Building Stabilization and Environmental Control.

11. Initiate salvage procedures detailed in the "Salvage Procedures" section of the plan. If the quantity of damaged materials is less than 50 volumes or 3 file drawers, they will be

salvaged in-house using the air-drying technique. *[If the quantity of damaged materials exceeds that amount, you must decide between (a) freezing them and then air-drying in small batches, (b) freezing them and having them commercially vacuum freeze-dried, or (c) calling in a company that provides on-site dehumidification services. See Appendix Q1 for details. Then insert here text that reflects that decision.]*

Response Procedures: Severe Storms and Floods

Severe storms may bring heavy rains, high wind, and hail. These events can cause flooding (local or widespread), roof leaks, broken windows, and assorted forms of water damage. If a severe storm is forecast, your awareness of the building's vulnerabilities and external hazards may dictate various protective or mitigating strategies. The following text should be revised to suit your situation.

1. When a severe storm is forecast, notify the Recovery Coordinator, _____ _____ *[insert name, office phone, and home phone]* or his/her designated back-up, _____ *[insert name, office phone, and home phone]*. If neither is available, call in the order listed in the Communications Plan (Appendix F).

2. The Recovery Coordinator, in consultation with administrative staff, will determine what level of response is warranted. The following may be considered, depending on the level of risk and available time and personnel:

   - Trim overhanging trees.
   - Remove unanchored outdoor materials (e.g., lawn furniture, planters, sculptures) and place them in an indoor location.
   - Protect windows, skylights, and glass-panel doors by attaching shutters or plywood sheets or by taping windows to reduce the danger of flying glass.
   - Dig trenches around and leading away from the building to carry storm water away from the structure.
   - Be sure gutters, drains, and downspouts are clear and flowing freely.

3. Inventory the disaster supply stockpile and replace or augment items as needed.

4. Verify that all emergency equipment (generators, etc.) is in the proper location and is in working order.

5. Remove the following collections materials: *[List them here, or provide a cross-reference to the Salvage Priorities list.]*

_____

_____

_____

Place them in a safe location, such as _____. *[Specify offsite storage locations or locations in the building that have low vulnerability to flooding, roof leaks, or other sources of water damage. Basement storage should always be avoided when rising water is a threat. Also, move materials away from windows, doors, fireplaces, etc.]*

6. Wrap the following in plastic sheeting and seal the sheeting with duct tape: *[Specify ranges, shelves, cabinets, cases, or other storage units or items that should be protected.]*

_____

_____

_____

7. Disconnect electrical equipment and turn off utilities as appropriate. See instructions in Appendix R, Utility/System Malfunctions.

8. Perform necessary backups of software and data files. Alert computer operations hot/cold site of potential emergency. See details in Appendix G, Protecting Information Technology.

9. Brief disaster team and other staff on plans and confirm responsibilities.

10. Evacuate when instructed to do so.

11. After the storm, implement applicable procedures outlined in the Salvage Procedures section.

Response Procedures: Minor Mold Outbreak in the Collection

PLEASE NOTE: If you are experiencing a major mold outbreak (e.g., an outbreak that encompasses more than just a few collection items, and/or affects the building and furnishings), consult Appendix D2 (Mold Remediation) of this plan for guidance. **Do not try to proceed on your own**.

Spores of mold and mildew are found almost everywhere, but they require the proper conditions (moisture, nutrients, temperature, and often darkness or dim light) to proliferate. Materials such as paper, cloth, leather, plastics, and adhesives may be consumed or stained by many types of mold.

The most critical factor in the development of mold is the moisture content of the materials on which the mold is growing. High moisture content is most often the result of high humidity or of dampness/wetness of collections. In the case of flood or other water damage to a building, furnishings, and/or collections, experience has shown that mold will "blossom" within 48 to 72 hours if action is not taken. Wet collections must be dried or frozen within that time, and buildings must be dried out. General cleanliness and the removal of dust and dirt reduce the risk of infestation, and good air circulation can be helpful in avoiding a mold outbreak (although air circulation should be limited once mold has occurred, to avoid spreading mold spores).

Even small amounts of mold can be a serious health hazard to staff and patrons. There are no federal or state regulations that govern exposure to mold, as there are for exposure to asbestos and other hazardous substances. It is impossible to specify "safe" or "unsafe" levels of exposure because the effects of mold will differ depending on the type of mold, the level of exposure, and the susceptibility of the person(s) exposed. Some people are more sensitive to mold than others, and even people who do not have a sensitivity to mold can develop one very quickly, with very little exposure. It is best to "assume the worst" and proceed with caution.

Mold must be dealt with promptly, and in a manner that safeguards everyone's health. Under no circumstances should staff members work unprotected with moldy collections without proper protection and training. A dust mask does NOT provide sufficient protection; an appropriate and properly fitted respirator must be worn. More information on the use of respirators is provided in Appendix D2, but the bottom line is that unless you have someone on staff that has been or can be fit-tested with a proper respirator, you should not clean mold in-house or touch or move collections or furnishings.

<u>In the event of a minor mold outbreak on a few isolated items</u>:

1. Contact the Recovery Coordinator, _____
   [insert name, office phone, home phone, cell phone].

2. Obtain appropriate supplies from the disaster supply kit located in _____ *[give location]*. Wear appropriate protective gear such as gloves and respirators. See Appendix D2 for more information on appropriate personal protective equipment. Remember that OSHA's *Respiratory Protection Standard* 29 CFR 1910.134 must be followed in the workplace.

3. Look for the source of moisture and correct it if one is found. Be sure to check for the roof for a leaky pipe, broken window, basement water seepage, etc. Measure the relative humidity in the immediate area if possible, and reduce the humidity to an acceptable level (50%) if possible, using dehumidifiers as needed. The following people can be called for assistance *[It may be appropriate to list here: (a) a representative of the maintenance/facilities department who can adjust the temperature and humidity, (b) the Recovery Coordinator, and (c) the librarian, archivist, records manager, or other responsible collection manager.]*

   Name/Title Office Phone Home Phone/Cell/Beeper

   _____

   _____

   _____

4. Determine whether or not the affected items must be retained. Can they be discarded, replaced, photocopied, or microfilmed? Consult the Collection Development Librarian if you have one.

5. If the items must be recovered and are wet, dry them immediately or freeze them for later drying.

   a. For drying, locate an isolated area where the materials could be air-dried. This area should be cool and dry, but should not share a ventilation system with the rest of the building to avoid spreading spores. Possible locations are *[specify a few rooms where infected materials could be dried]*:

      _____

      _____

      _____

   b. Move items to be air-dried to the isolation area in polyethylene bags, located *[give location]* _____. Do not leave the items in the bags after moving them. Use aseptic techniques (see Appendix D2) when handling items, to prevent spreading spores and contaminating other objects. Minimize the opening and closing of doors in the isolation area.

c. Air-dry the items according to the instructions in Appendix Q1, but DO NOT use fans in the drying area.

d. For freezing, place items in freezer bags located in _____ *[give location]*.Place the bags in the freezer _____.

7. Once items are dry, the mold must be removed. A small number of items can be cleaned in-house, but only if appropriate personal protective equipment, including a fit-tested respirator, is worn by the person(s) doing the cleaning. Again, see Appendix D2. Check the suitability of the collection before carefully vacuuming the mold with a HEPA filter vacuum, located *[give location]* _____. Do not use a wet/dry vacuum, as these can exhaust mold particles into the air. See Appendix D2 for detailed instructions on vacuuming.

8. Clean and dry the affected shelving area(s) thoroughly. Persons doing this work should also be protected with proper safety equipment (again, see Appendix D2). After removing all collections from the shelves, vacuum with a HEPA vacuum, located _____ *[give location]* and wipe all surfaces with detergent solution, avoiding the use of fungicides such as bleach if possible. If a commercial cleaning product such as bleach must be used, it is located *[give location]* _____. Be careful not to mix bleach and ammonia products, as this creates a toxic gas, and use a 1:10 ratio of bleach to water. Do not return materials to the area until all shelves are completely dry.

9. Check materials periodically (at least monthly) for evidence of new or recurrent growth. Carry out these inspections for one year following the infestation.

<u>If mold is discovered in whole stack ranges or rooms, or if mold has spread to walls or furniture</u>:

1. Contact the Recovery Coordinator, _____ *[insert name, office phone, home phone, cell phone]*.

2. Quarantine the area. Close doors or hang plastic sheeting to close off the area, and do not allow air to circulate from the affected area to other areas of the building. Plastic sheeting is located *[give location]* _____.

3. The Recovery Coordinator should contact appropriate internal staff and outside service providers *[It may be appropriate to list here: (a) a representative of the maintenance/facilities department, (b) conservator or preservation specialist, (c) the librarian, archivist, records manager, or other responsible collection manager, (d) mold*

and water damage recovery companies. Be sure to use a service provider that uses a variety of techniques to sample for mold. For service providers, see Suppliers and Service Providers, Appendix B2.]

Name/Title Office Phone Home Phone/Cell/Beeper

_____

_____

_____

4. See Appendix D2, Mold Remediation, for additional information on dealing with a large-scale mold infestation.

Response Procedures: Earthquake

An earthquake will likely knock over shelves, storage units, and equipment. Book shelves, ceiling tiles, and overhead light fixtures will crash to the floor. In addition, structural supports may be twisted or broken. The most serious problems will be water damage from broken pipes and the possibility of fire or explosions from gas leaks. Also, asbestos might get dislodged or exposed, and this could significantly delay implementation of recovery operations.

The following instructions have been numbered for ease of reference. In reality, many of them should occur simultaneously. The more people are available, the more quickly the response can proceed.

In this, as in all disasters, the first priority is to protect human life and safety.

1. If you are in book-stack aisles or near file cabinets, move away from them.

2. Take shelter in a doorway, under a sturdy desk or table, or in another well-protected area.

After the main shock has occurred, take the following actions:

3. Be prepared for after-shocks.

4. Check for broken water pipes, shorting electrical circuits, or leaking fuel. Do not use matches or lighters, since there may be flammable gas in the air.

5. Turn off gas and water at main valves or meter boxes if you smell gas or see water flowing. Turn off all appliances.

6. Assist those who have been trapped or injured by falling debris, glass, etc. Do not move any seriously injured persons unless they are in obvious, immediate danger from fire, building collapse, etc.

7. Listen to a battery-powered radio for instructions.

8. Notify the fire department of any fires.

9. Open doors carefully and watch for falling objects.

10. Do not use elevators.

11. Do not use the telephone, including cell phones, except in an emergency. The lines should be kept free for rescue operations.

12. Evacuate the building if it is safe to do so. Do not re-enter until the building has been declared structurally sound by the fire department.

13. Implement the recovery procedures in the Salvage Procedures section of the disaster plan.

Response Procedures: Hurricane

Hurricanes are accompanied by heavy rains and high winds that typically cause major structural damage (especially loss of or damage to roofs, broken windows, etc.), flooding, widespread power outages, and major disruption of customary services. Experience has shown that cultural institutions can weather the storm fairly well if they maintain a high level of readiness. A comprehensive guide to hurricane preparedness is Michael Trinkley's *Hurricane! Surviving the Big One: A Primer for Libraries, Museums, and Archives* (Columbia, SC: Chicora Foundation, 1993), a copy of which is located _____ *[give its location or include it with the plan]*. The following procedures are adapted from guidelines in that book.

At the Beginning of Hurricane Season (June):

1. The Recovery Coordinator and _____ *[add other appropriate safety and/or administrative personnel]* will conduct a walk-through of the building to look for changes since the disaster plan was developed and determine what revisions are required.

2. _____ *[specify the Recovery Coordinator, disaster team, or other position/group]* will update the disaster plan as necessary and distribute copies to all staff members. If no update is required, the Director will send a memo to all staff and allied offices reminding them that hurricane season is beginning and asking them to review the disaster plan.

3. _____ *[specify the responsible position]* will inventory the disaster supply kit(s) to make sure all items are present and in good order. The inventory will include items kept in other locations (warehouse, etc.).

4. Verify the operation of the standby generator.

5. _____ *[specify the responsible position]* will double-check information with outside disaster recovery suppliers and service providers listed in Appendix B2, Suppliers and Service Providers, to notify them of any changes in our

needs or requirements and get updated information on their services, availability, and prices.

6. _____ *[specify the responsible position]* will contact the insurance carrier to review the policy and make sure new collections and equipment are covered. *[Most Navy libraries are self-insured, but a few may have commercial insurance on some special materials. See Appendix N, Insurance.]*

7. _____ *[specify the responsible position]* will review previously established "safe havens" inland to which we may send priority collections and important data. Verify that they are still operating and accessible.

When a Hurricane is in the Area

1. Notify all staff that a hurricane disaster could occur and that the plan is being implemented.

2. Begin hourly round-the-clock monitoring of the storm.

3. Members of the disaster team and other essential personnel will provide the Recovery Coordinator with 24-hour schedules, locations, and phone numbers. If possible, assign beepers so personnel can be summoned immediately in the event of an emergency.

4. _____ *[specify the responsible position]* will review with staff their responsibilities in the event of a disaster. Determine when various staff should report to work after the storm. Make sure all staff know what to do after the storm, for power outages and telephone service disruptions may make it impossible to communicate with them directly in the first 48 hours after the storm.

5. _____ *[specify the responsible position]* will meet with the police department and/or emergency management officials to develop a mechanism by which staff members would be allowed access to the building in the aftermath of a hurricane.

When a Hurricane *Watch* is Announced

1. _____ *[specify the responsible position]* will notify all staff that a hurricane watch has been announced and that the installation is entering an advanced stage of preparedness. As far as possible, staff will be freed of routine duties so they can concentrate on preparedness responsibilities. This may require closing the library/archives.

2. If the hurricane watch is announced outside normal business hours, _____ *[specify the responsible position]* will notify key employees by

phone using the Communication Plan (Appendix F) and have them begin preparations at once.

3. _____ *[specify the responsible position]* will begin to notify outside contractors that we may be calling on their services in 24 to 48 hours. Give highest priority to notifying the following suppliers and service providers (see addresses and phone numbers in Appendix B2):
[In the aftermath of a hurricane, specialized recovery services such as freeze-drying companies may be flooded with calls for assistance. Advance communication with them will increase your chance of getting their priority attention after a hurricane. A few companies have "advance registration" procedures for gathering information about your authorization protocols, building, systems, collections, and so on. This, too, can expedite their response.]

_____

_____

_____

_____

_____

4. Begin preparations in the building. Have all staff clear their desks and put papers, files, collections, and other materials under cover. Staff should back up their computer files to the server or to CD/diskette, as appropriate. Staff should take backup CDs or diskettes with them.

5. _____ *[specify the responsible position]* will initiate packing of materials that are to be transferred to off-site storage. Transportation may be provided by _____ *[If you plan to use an agency van/truck, specify how arrangements are made. Otherwise, note the availability of rental trucks in Appendix B2, "Suppliers and Service Providers."]*

6. Basic patron services are terminated at this point.

7. Non-essential personnel will be released to go home at _____. *[Specify the point at which most staff will be told to go home, for they will have plenty to do there. Non-essential personnel must be released sufficiently in advance to permit travel along safe routes to their homes or places of evacuation, and travel time must take into account the possibility of highway and bridge closures.]*

8. _____ *[specify the responsible position]* will identify shelters established by the Navy or local government and make sure this information is distributed to all staff.

9. _____ *[specify the responsible position]* will fill water storage containers and make sure they are stored in two different areas of the building.

10. _____ *[specify the responsible position]* will make sure all the vehicles are filled with gas. If not already in place, install locking gas caps, since others may steal gas in an emergency.

11. _____ *[specify the responsible position]* will contact local freezer companies to reserve space. Two companies in _____ *[name a major city that is relatively nearby but not likely to be affected by the storm]* will also be contacted as a backup.

When a Hurricane *Warning* is Announced

1. _____ *[specify the responsible position]* will oversee efforts to secure the building:
   - Install hurricane shutters or board windows.
   - Limit building access to one or two points so others can be secured.
   - Brace double doors as well as garage and loading dock doors.
   - Use silicone caulk to seal spaces around shutters, doors, windows, or other places that water could enter.

2. _____ *[specify the responsible position]* will oversee the removal of all loose objects on the grounds (benches, trash cans, gates, sculptures, etc.) and the removal of items (awnings, antennas, etc.) that could blow away.

3. _____ *[specify the responsible position]* will ensure that a government credit card is available for use in purchasing recovery supplies after the hurricane. See procedures in Appendix H, Emergency Funds.

4. *[The following is appropriate only to agencies/organizations that own vehicles.]* _____ *[specify the responsible position]* will handle the protection of the organization's vehicles:
   - Move half the vehicles to a parking garage located at _____ *[specify preferred location]*.
   - Put on-site vehicles under cover or park them close to the building on the inland side.

5. Based on available storm projections, the _____ *[specify the responsible position(s)]* will determine the safe site to which priority items will be moved.

6. _____ *[specify the responsible position]* will oversee the movement and securing of collections that remain in the building. Work will proceed according to the order established in the Salvage Priorities section of this plan.
   - Move collections away from windows and out of basements and ground-level areas.
   - Cover collections with plastic sheeting and secure the sheeting with duct tape.
   - Cover desks, computers, copiers, and other equipment with plastic sheeting and secure the sheeting with duct tape.

7. Turn office refrigerator(s) or walk-in coolers to the coldest setting.

8. Freezers and refrigerators used to store collection materials should be connected to generators.

9. Staff members will be informed when and where to meet after the hurricane.

10. Upon direction of _____ *[specify the responsible position]*, the building will be closed.

11. Secure last hurricane shutters as staff leaves.

12. Leave power on for essential equipment (security, fire protection, emergency lighting, environmental controls). Turn off the rest.

13. _____ *[specify the responsible position]* will advise the police and fire departments of our status.

The First Day After the Hurricane

1. Ensure that the building is safe to enter. If there is any doubt, _____ *[name a staff position, contractor, or other expert]* will conduct an inspection. _____ *[specify the responsible position]* will assess the building's condition as soon as possible. If there is damage to the building or facilities, begin response.

2. Transfer disaster supplies and equipment to a central, prearranged area or offsite location that is secure but available to all staff members. Begin unpacking essential materials such as hard hats and protective clothing, camera and film, and so on.

3. Begin taking photographs of the building, storage areas, and collections.

4. Activate the command post. See instructions in Appendix O, Emergency Operations Center.

5. Begin assigning staff responsibilities, depending on those who are able to reach the site, and initiate personnel management system.

6. If appropriate, take steps to protect collections from further damage by moving them to a dry, secure location or covering them with plastic sheeting.

7. Take steps to make the building weather-tight by covering broken windows and damaged roofs.

8. While work crews are making the building weather-tight, quickly evaluate damage to the collections and determine whether the recovery can be handled in-house or requires contracted assistance.

9. Contact outside suppliers that are needed, using the lists in Appendix B2, Suppliers and Service Providers. If telephones are inoperable, see the Communication Plan (Appendix F).

10. Contact the insurance carrier if any of the collections are commercially insured.

11. Implement recovery plans outlined in the "Salvage Procedures" section and Appendix Q (Salvage Procedures) of this plan.

Response Procedures: Wildfire

At the Beginning of Fire Season

1. The Recovery Coordinator and _____ *[add other appropriate safety and/or administrative personnel, and include a fire department official]* will conduct a walk-through of the building to look for changes since the disaster plan was developed and determine what revisions are required.

2. _____ *[specify the Recovery Coordinator, disaster team, or other position/group]* will update the disaster plan as necessary and distribute copies to all staff members. If no update is required, the Director will send a memo to all staff and allied offices reminding them that fire season is beginning and asking them to review the disaster plan.

3. _____ *[specify the responsible position]* will inventory the disaster supply kit(s) to make sure all items are present and in good order. The inventory will include items kept in other locations (warehouse, etc.).

4. _____ *[specify the responsible position]* will verify the operation of the standby generator.

5. _____ *[specify the responsible position]* will clear roof of any leaves, pine needle litter, or other debris, and keep it cleared throughout the fire season.

6. _____ *[specify the responsible position]* will double-check information with outside disaster recovery suppliers and service providers listed in Appendix B2, Suppliers and Service Providers, to notify them of any changes in our needs or requirements and get updated information on their services, availability, and prices.

7. _____ *[specify the responsible position]* will contact the insurance carrier to review the policy and make sure new collections and equipment are covered. *[Most Navy libraries are self-insured, but a few may have commercial insurance on some special materials. See Appendix N, Insurance.]*

8. _____ *[specify the responsible position]* will review previously established "safe havens" to which we may send priority collections and important data. Verify that they are still operating and accessible.

When a Wildfire is in the Area

1. Notify all staff that a wildfire is in the area and that the plan is being implemented.

2. Begin constant, round-the-clock monitoring of the fire.

3. Ensure that packing materials and transport vehicles will be available in case they are needed to transfer materials to off-site storage. *[If you plan to use an agency van/truck, specify how arrangements are made. Otherwise, note the availability of packing materials and rental trucks in Appendix B2, "Suppliers and Service Providers."]*

4. Members of the disaster team and other essential personnel will provide the Recovery Coordinator with 24-hour schedules, locations, and phone numbers. If possible, assign beepers so personnel can be summoned immediately in the event of an emergency.

5. _____ *[specify the responsible position]* will review with staff their responsibilities in the event the wildfire reaches the repository. Determine when various staff should report to work after the fire, and make sure all staff know what to do in the first hours after wildfire.

6. _____ *[specify the responsible position]* will meet with the fire department and other emergency management officials to develop a mechanism by which staff members would be allowed access to the building in the aftermath of a wildfire.

If the Wildfire Starts Heading in Our Direction (Fire Watch)

1. _____ *[specify the responsible position]* will notify all staff that a fire watch has been announced and that the installation is entering an advanced stage of preparedness. As far as possible, staff will be freed of routine duties so they can concentrate on preparedness responsibilities. This may require closing the library/archives.

2. If the fire watch is announced outside normal business hours, _____ *[specify the responsible position]* will notify key employees by phone using the Communication Plan (Appendix F) and have them begin preparations at once.

3. _____ *[specify the responsible position]* will begin to notify outside contractors that we may be calling on their services. Give highest priority to notifying the following suppliers and service providers (see addresses and phone numbers in Appendix B2):
   [In the aftermath of a large-scale wildfire, specialized recovery services may be flooded with calls for assistance. Advance communication with them will increase your chance of getting their priority attention after a disaster.]

_____

_____

4. Begin preparations in the building. Have all staff clear their desks and put papers, files, collections, and other materials under cover, to prevent deposits of soot/ash or water that might leak through the roof.

5. _____ *[specify the responsible position]* will initiate packing of materials that are to be transferred to off-site storage. Transportation may be provided by _____ *[If you plan to use an agency van/truck, specify how arrangements are made. Otherwise, note the availability of rental trucks in Appendix B2, "Suppliers and Service Providers."]*

6. Basic patron services are terminated at this point.

7. Non-essential personnel will be released to go home at _____. *[Specify the point at which most staff will be told to go home, for they will have plenty to do there. Non-essential personnel must be released sufficiently in advance to permit travel along safe routes to their homes or places of evacuation, and travel time must take into account the possibility of road closures.]*

8. _____ *[specify the responsible position]* will identify shelters established by the Navy or local government and make sure this information is distributed to all staff.

9. _____ *[specify the responsible position]* will contact local freezer companies to reserve space. Two companies in _____ *[name a major city that is relatively nearby but not likely to be affected by wildfire in your area]* will also be contacted as a backup.

If the Wildfire Comes within "X" Miles

The number of miles that is considered critical is dependent on terrain, wind, and availability of personnel. Consult with the fire department to determine the safe margin for your facility.

1. _____ *[specify the responsible position]* will determine to which safe site the priority items will be moved.

2. Dress in natural fibers (100% cotton or wool). Wear long pants, long sleeves, and boots. Be sure to carry gloves, goggles, a large handkerchief cloth and water to wet the handkerchief/cloth.

3. _____ *[specify the responsible position]* will oversee efforts to secure and protect the building:

a. Re-examine the exterior of the building and remove any combustible items. Soak with water anything that cannot be removed.

b. Put plastic trash cans full of water around the base of the building. Soak burlap sacks, rugs, and any heavy natural fiber to beat out embers.

c. Position garden hoses or fire hoses so they can reach any outside surface of the building.

d. Set a ladder against the building on the opposite side from the approaching fire. Place lawn sprinklers on the roof, and soak it thoroughly.

e. Close windows, vents, doors, and non-combustible or heavy window coverings. Remove lightweight curtains.

f. If time allows, turn off the HVAC system and seal the building as much as possible. Use silicone caulk to seal spaces around windows, doors, or other places smoke, ash, or water could enter.

g. Shut off gas at the meter. Turn off pilot lights in the _____. *[List stove, water heater, furnace, or other gas-operated appliances in the building.]*

h. Keep the fire always in front of you. Never let the fire flank you on even one side. Use judgment on when to evacuate.

i. Keep exit vehicle away from approaching fire but nearby. Never let your exit route be cut off by fire.

4. _____ *[specify the responsible position]* will ensure that a government credit card is available for use in purchasing recovery supplies. See procedures in Appendix H, Emergency Funds.

5. *[The following is appropriate only to agencies/organizations that own vehicles.]* _____ *[specify the responsible position]* will handle the protection of the organization's vehicles:
   - Move half the vehicles to a parking garage located at _____ *[specify preferred location]*.
   - Put on-site vehicles under cover or park them close to the building on the side away from the approaching fire.

6. _____ *[specify the responsible position]* will oversee the movement and securing of collections that remain in the building. Work will proceed according to the order established in the Salvage Priorities section of this plan.
   - Move collections away from windows.
   - Cover collections with heavy tarpaulins, blankets, etc. Plastic sheeting is not recommended, since it could melt at high temperatures.
   - Cover desks, computers, copiers, and other equipment.

7. Staff members will be informed when and where to meet after the fire.

8. _____ *[specify the responsible position]* will advise the fire and police departments of our status.

When Staff Are Allowed Back into the Area

Develop instructions using as a template "The First Day After the Hurricane" in "Response Procedures: Hurricane." You may also use some of the information from "Response Procedures: Medium-to-Large Scale Disaster."

Response Procedures: Medium-to-Large Scale Disaster

Disaster response procedures are the steps taken from the time an emergency situation is detected through the time when holdings are actually removed to begin packing, drying, or other salvage operations. This section outlines the basic steps that may be taken. The order may be altered depending on the nature of the emergency, extent and type of damage, and available resources.

Note to planners: This section is written to serve as a general outline or checklist of the steps involved in disaster response. In addition, you can adapt and customize this text to provide instructions for disaster situations not specifically addressed in this workbook.

1. Assess the situation

The person who discovers the emergency will determine the nature of the damage, the number and type of records affected, and the extent of action and assistance needed.

a. Notify responsible staff

During working hours, contact the Recovery Coordinator, _____ *[insert name, title, and office phone number]*, who will make the determination by phone or through an inspection of the site.

After-hours, notify: *[It may be appropriate to list here (a) the maintenance/facilities staff, (b) the Recovery Coordinator, and (c) the security office.]*

Name/Title Office Phone Home Phone/Beeper

_____

_____

_____

_____

_____

b. Assist the injured

Assist those who have been trapped or injured by falling debris, glass, etc. Do not move any seriously injured persons unless they are in obvious, immediate danger from fire, structural collapse, etc.

c. Determine damage

Through phone conversation or site visit, the responsible staff will determine whether or not to declare a disaster.

(1) The situation will be deemed an *emergency* if the nature and extent of damage is of limited severity and can be dealt with by available personnel. See the Salvage Procedures section and Appendix Q (detailed salvage procedures) for instructions.

(2) A *disaster* will be declared if the nature and extent of damage warrants resources beyond those available at the time.

2. Notification

a. Determine personnel needed

If the Recovery Coordinator (or backup) declares a disaster, the notification plan will go into effect. The following also may be called to report for duty:

- _____ *[specify base commander, repository director, etc.]*
- members of the Disaster Team. See names and contact information in Appendix A1, Disaster Team.
- supplementary personnel as needed. See Appendix A2, Supplemental Personnel.
- others as determined by the Recovery Coordinator.

Personnel shall be informed exactly when and where to report. Additional details are provided in the Communication Plan (Appendix F).

b. Means of notification

If phones are working, use the phone numbers listed in the Staff List (Appendix A3).

If phones are inoperable, use alternate mechanisms outlined in the Communication Plan (Appendix F).

c. Establish personnel management system

The Personnel Manager (or other team member designated by the Director or the Recovery Coordinator) will establish mechanisms for the following:

· Check in/out times of all staff members, volunteers, ancillary personnel, and contractors in order to (a) keep records of who was at the recovery site at any given

time, (b) ensure appropriate pay/compensation, and (c) track how long people have been working and make sure they take breaks or are relieved.

- Maintain records of time spent by individuals. *[Note: Any special time-keeping requirements dictated by the emergency services department, insurance carrier, etc. should be specified here and in Appendix N, Insurance. If you have record-keeping forms for that purpose, reproduce them in Appendix L, Forms, and note it here.]*
- Training staff and volunteers.
- Provide space, supplies, and other materials needed for refreshments, meals, and rest areas.
- Effectively supervise volunteers and supplemental staff.

3. Establish a command post

In a routine emergency where the building is intact, operations will be controlled and coordinated through the Recovery Coordinator's office, located at _____ *[give address/room number and phone]*.

If offsite space is required for operations control or for salvage activities (sorting, packing, drying, etc.), follow instructions in Appendix O, Emergency Operations Center.

4. Procure/assemble the necessary supplies and services

The Procurement Coordinator will consult with the Recovery Coordinator and Personnel Manager to determine what supplies and services are required for the recovery operations.

The in-house supply/equipment stockpile inventory is produced in Appendix B1, Disaster Supply Stockpile.

External suppliers and service providers already identified are listed in Appendix B2, Suppliers and Service Providers.

If cash, purchase orders, or requisitions are needed, follow the instructions in Appendix H, Emergency Funds.

A sample disaster recovery contract is provided in Appendix D3.

5. Establish security measures

a. The _____ *[specify responsible position/person]* will secure the site as far as possible by replacing doors and windows, erecting a perimeter fence, or other means.

b. Only authorized persons will be allowed to enter the site. They will be designated by the use of _____. *[Some possibilities are: identification badges, phosphorescent vests, specially marked caps or hard hats. If these are specified, the organization must have an ample supply purchased and printed and maintain them in the in-house disaster supply stockpile so they will be available immediately.]* The Personnel Manager will be responsible for distributing these and will maintain a sign-in/sign-out register.

c. Special security personnel may be required if the security system has been damaged, if doors or windows are damaged, or if the facility is not substantially intact. In such cases, the Operations Manager and/or Recovery Coordinator will work with the Security Officer to arrange for adequate security.

d. Unauthorized persons in the disaster area should be reported immediately to the team captain, immediate supervisor, or Security Officer.

6. Get clearance to enter the site

After a fire or other major disaster, the Fire Marshal or other public officials will be in charge of the building and will have the power to declare when it is safe for re-entry. No staff member will enter the facility until it has been declared safe.

If there are asbestos, PCBs, or other hazardous materials, it may be several days before clean-up is complete and the staff is allowed to enter the building. Clearance may also be delayed if the disaster is a result of arson or vandalism, for the area will be declared a crime scene and staff may not be allowed to enter until the forensic work is finished.
Reference: Appendix D1: Building Stabilization & Environmental Control, will provide guidance on this topic.

7. Make a detailed damage assessment

The Director, Recovery Coordinator, and Photographer, perhaps accompanied by the base commander and/or necessary others, will make a detailed assessment of damage. If appropriate, the librarian, archivist, or curator should be involved in the assessment, since s/he best knows the collections. For example, collections wrapped in plastic may have pooling of water and soot and even melting of the plastic and these circumstances if left unchecked can be disastrous.

The Photographer will use the camera and film, or a digital camera, stored in the disaster stockpile in _____ *[give room number or other location]*.

Based on requirements of your risk manager, insurance carrier, or state/federal emergency management agencies, you may wish to add additional details about the types, form, and level of documentation that is required. Or you may refer to Appendix N, Insurance.

8. Stabilize the building

The _____ *[name the responsible position or unit]* will supervise the stabilization of the building. First priority will be given to actions that ensure the safety of people. Second priority will be for the restoration of power. Other actions will receive attention as soon as possible. Actions that may be needed include the following:

- Work with Health Department on cleanup of sewage, biological agents, chemicals, and other contaminants.
- Shut off and repair/restore utilities (gas, electricity, etc.).
- Stabilize leaning or collapsed shelving.
- Remove mud, water, ceiling tile debris, broken glass, etc.

Appendix D (Building Stabilization, Environmental Control, and Mold Remediation) provides additional details.

9. Stabilize the environment

The _____ *[name a position]* will supervise the restoration of environmental controls with the goal of providing a cool, dry climate in the affected area(s).

a. If the heating/air-conditioning system is operable, settings will be adjusted to provide maximum cooling and dehumidification, with the goal of maintaining the temperature below 70°F and the relative humidity below 50%. The system will run 24 hours per day.

b. If the heating/air-conditioning system is not working due to damage or power outage, follow steps outlined in Appendix D1, Building Stabilization and Environmental Control.

c. The _____ *[name a position]* will ensure that the staff monitors the temperature and humidity at least every 4 hours to measure progress. The following monitoring devices may be used. *[Specify the devices you have available and list the location of each.]*

Item	Location
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Appendix D1, Building Stabilization and Environmental Control, provides additional details.

d. If warranted, provide suitable microclimates for wet wood, ivory, furniture, and other artifacts. See Appendix Q5, Salvage Procedures: Artifacts and Museum Objects, for further details.

10. Develop a detailed plan of action

The _____ *[specify key personnel who will be involved, generally including the Director, Operations Manager, Recovery Coordinator, and Facilities Manager]* will meet to review the extent of damage, status of building systems, and available personnel. They will develop a plan of action that addresses major issues in the recovery plan. In the event of a large-scale disaster, a key decision will be which recovery operations to handle with existing staff and which to contract to specialized disaster recovery companies. This decision will influence all facets of the recovery plan.

The Disaster Team and other staff will be briefed on the plan of action and their responsibilities in it. If appropriate, training in specific techniques such as packing, cleaning, or air-drying will be offered by _____ *[specify a position]*.

If appropriate, _____ *[specify a position; this generally falls to the Director or Public Affairs Officer]* will issue communications to the media.

If you are self-insured or have commercial insurance, add text regarding notification of the risk manager or insurance company.

Salvage Priorities

Background Information

Decisions regarding what to save first in the event of a disaster should be made before the emergency arises. Staff members involved in the planning will be better able to give direction about recovery operations without the added pressure of dealing with such a decision.

Your salvage priorities will guide staff members or recovery specialists carrying out the recovery operation. But they also have other uses. You may use them to determine the level of protection that various materials need when you have forewarning of a hurricane, flood, wildfire, or other disaster. Firefighters may use them to take protective steps in the fire-fighting operation.

The Process

Unless you are the only collection manager (librarian, archivist, records manager, curator, etc.) in your organization, the establishment of salvage priorities should be a committee activity. A wide variety of perspectives should be included in the process. When you are standing ankle-deep in water is not the time to hold a staff meeting to decide which materials will survive and which will not. Reach consensus now, to avoid problems later.

It is generally easiest first to set priorities for each broad subject classification, room, department, or floor of your repository. Those will be used when dealing with the routine, small-scale emergencies that are most likely to occur. Detailed salvage priorities should be listed in Appendix P (Salvage Priorities--Detailed) of the plan. Then the organization-wide priorities can focus on those that are most important within those subdivisions; list those in the "Salvage Priorities" section that follows this fact sheet. Indicate the materials that are of highest priority in a major disaster.

Some existing documents and policies may help you set salvage priorities. Collection development policies are an important resource for libraries as well as some archives and special collections. Records managers and archivists may consult retention/disposition schedules.

Do not try to specify salvage priorities on an item-by-item basis. Instead, think in terms of library call number classifications, record groups or series, and so on. An exception may be made for those few particular treasures of unique importance.

Factors to Weigh

Vital records. These should receive highest priority for protection and recovery.

Importance. The importance to, and extent of use by, your users should be a prime consideration. Materials that are most often used and those that support your fundamental mission should receive high priority. Thus, it is not unusual for an academic library to give precedence to its

general collection (which supports the fundamental mission of educating undergraduates) over its rare books or other special collections.

However, this criterion must be weighed against other factors, especially the availability of replacements. Many items in the circulating collection may still be in print, whereas rare books, archives, manuscripts, and other primary source materials are generally irreplaceable, as are staff members' working files such as in-process records, personnel files, and so on.

Availability of replacements. Do not assume that materials in the general, circulating collection are still in print. Publishers often allow books to go out of print the same year they are published, so even basic works may not be replaceable *per se*. In some cases, it is appropriate to replace a current holding with a newer edition, but sometimes no real replacement exists. The following questions may help you assess the availability of replacements.

Are there backups? Computer software and files should have back-up copies stored off-site, and it is a good idea to create microfilm security copies of irreplaceable items such as archives, manuscripts, and rare books.

In what parts of the collection are a high percentage of titles already out of print?

Could you buy other copies in the original or an alternate format? If you have materials of which another agency retains a copy, yours could be replaced. Many periodicals and newspapers could be replaced with microfilm copies.

Would other editions suffice? Many reference books and library materials could be suitably replaced with a newer edition.

Could your users rely on copies located elsewhere--for example, in nearby libraries or through interlibrary loan?

Cost. Is the cost of replacement more or less than the salvage cost? When calculating replacement cost, include not just the purchase price, but also the costs of ordering, shipping, cataloging, shelf preparation, and other parts of the process. The fact that some materials could be replaced does not necessarily mean you should assign them low priority, for the cost of replacement is generally much higher than the cost of salvage. In addition, your existing collection has been built carefully over time, but one built in haste (even with an ample supply of insurance reimbursements) is less likely to be so carefully built.

Monetary value. In general, this is not an adequate factor on its own, since most collections exist for research, archival purposes, and other reasons that have nothing to do with resale value.

Scholarly value. Are certain collections or subject areas particularly strong? Which materials are of high value for research in military history or other scholarly areas? Is the collection of special value to the town, state, nation, etc.?

Collection tools. Insurance claims may require that you prove what materials you own, so tools such as bibliographic records, online catalogs, card catalogs or shelf lists, finding aids, registers, and accession lists should receive high

priority. In addition, access to these tools will make it easier for you to restore operations.

Organizational records. Some records--while not vital records *per se* -- are important for the smooth resumption of operations, and their loss would pose a significant inconvenience. This category might include: contracts and legal papers, financial and accounting information, and contact lists (donors, members, clients, etc.).

Artifactual or intrinsic value. Items that have value in their own right as objects, and for which surrogates (photocopies, microfilm, etc.) are inadequate.

Format. Some media are not readily salvageable. For example, in case of a major fire, plastic-based media (photographic negatives, microfilm and motion picture film, audio and videotapes, and phonodiscs) might be damaged beyond salvage. In case of heavy water damage, materials on coated paper may not be salvageable unless recovery begins within about 12 hours, and even then the salvage process for these media is so labor-intensive that you may decide to focus instead on other materials. You may determine to write off certain materials in specified situations if the length of exposure to water, heat, or other adverse conditions would reduce the chances of successfully salvaging them.

Ownership. Materials on loan or that you have received on approval must be considered. In some cases, it may be necessary to make them a top priority.

Assigning Priorities

After weighing those factors, sort the materials into high, medium, and low priority. Various strategies are possible, but these may be the most useful options.

You may decide which criteria (using those from the above list and others that matter to your repository) are most important. Weigh each part of the collection according to the various criteria, assigning a number of points (e.g., 1 to 10) for each. Then set priorities based on point totals for each collection area.

More simply, you can make gross judgments based upon the following guidelines:

High Priority: materials used most frequently and/or intensively by patrons; vital records for which no back-up exists; materials that cannot be replaced and are (by whatever criteria) most important; collection tools and other materials that are critical to ongoing operations.

Medium Priority: important materials that could be replaced but whose replacement costs would exceed the cost of salvage.

Low Priority: materials that can be replaced in the original or some other format; materials that have a high monetary value but low value by other measures. This could include artifacts that have had detailed condition reports and thorough analysis, which would enable an easier facsimile to be reproduced or an artifact to be replaced through an insurance claim.

Accept the fact that--regardless of the priorities you set--in the event of a disaster,

you will determine that some materials are not salvageable. You may calculate that some materials are not worth the effort required to salvage them. For example, if volumes on coated paper (like yearbooks and many medical journals) have already begun to "block" by the time you get to them, then salvage may not be possible or may not be warranted by their value in the collection. Other materials, such as old phone books, may be written off as non-essential.

Salvage Priorities

In the event of a disaster that involves the whole building, collection materials should be protected (the area containing the collection can be marked with room label for usability), transferred to a safe location, or salvaged in the priority order listed below. See Appendix K for floor plans and locations of these materials. For area-specific disasters--those that affect only one room, department, etc.--see the detailed salvage priority lists in Appendix P.

Priority	Materials *[specify call number range, record group, item, etc.]*	Location	Staff Specialist[5]
1			
2			
3			

[5] Specify the person who is most familiar with the materials. This person may be a bibliographer, reference librarian, records analyst, curator, archivist, or the creator of the files, etc.

Salvage Procedures: Libraries and Archives

Background Information

The disaster plan should include information about recovery techniques and methods that are available. Instructions should include recovery plans for all the different media (books, paper documents, photographs, museum objects, etc.) in the collection. The following questions should be addressed in the planning process to help you develop recovery plans.

1. What will be done with damaged materials? Leave in place or pack and remove? To where? How? What kind of work flow makes sense?
2. Who supervises the operations?
3. What if materials are covered with mud? sewage? chemical contaminants?
4. How will wet carpet and furniture be handled?
5. What services and technologies are available for dealing with the building and furnishings? Which are available for dealing with the collections?
6. How will computer equipment be handled? What technologies and services are available?
7. Are freezers available?
8. What priorities must be addressed?
9. What recovery methods can be used?
10. What kinds of media do we have in the collection? Do some media require special attention (e.g., electronic, magnetic, photographs, glossy/coated paper)?
11. What drying methods are available to us for these media? Where can we obtain them? Whom do we contact (including after-hours and on weekends/holidays)? What do we need to learn beforehand?
12. Whom can we call for advice or on-site assistance? Who else is available regionally and nationally?
13. What should we discard? What should we salvage? What should be the top priorities for salvage? Are there legal requirements that affect this?
14. What does the insurance carrier say? Can recovery begin before an insurance adjustor arrives on the scene?
15. Who will document the disaster scene and take notes on the extent of the damage? (This is especially important for insurance claims.)
16. What kinds of training do staff need beforehand? How can training be provided quickly during the disaster?
17. Which interrupted services must get back into operation first?
18. Who will get the building, department, office(s), and furnishings cleaned, repaired, etc.? An in-house unit or an outside contractor?

Salvage Procedures

This section assumes that all the items covered in the Response Procedures section have been addressed. In addition, before launching the salvage operation, you must make several key decisions:

1. *Which materials will be salvaged and which discarded?*
2. *Will the salvage operation be handled by your personnel, or will some or all of it be contracted to disaster recovery specialists?*
3. *How will the materials be salvaged? Recovery operations for materials to be air-dried differ from those that are appropriate for holdings to be sent to a drying facility. The background materials in the Appendix Q1, Drying Wet Books and Records, and literature cited in the Bibliography (Appendix T) explain these differences.*

If there is widespread clean-water damage (if there is any doubt, a water sample must be taken and tested to confirm the water is clean) but collections are mostly damp rather than soaked, on-site dehumidification (explained in "Drying Wet Books and Records," Appendix Q1) may be the chosen salvage method. In that case, the salvage operation will be simplified, since most items will be dried in place.

Text in this section provides basic information and general guidelines, but it will require significant revision based on local decisions.

Before working on this section of the plan, you must understand the most commonly-used drying techniques: air-drying, dehumidification, freezer-drying, and vacuum freeze-drying. See the explanations in "Drying Wet Books and Records," Appendix Q1. Please note that vacuum thermal drying is described in Appendix Q1, but it is not a widely-used option because the materials are heated, staying wet while they dry and causing additional distortion.

Before salvage begins, the _____ *[specify Operations Manager, Recovery Coordinator, or appropriate other position]* will:

- determine the salvage priorities for various parts of the collection. These will be based on the priorities given in the Salvage Priorities list and Appendix P, but adjusted based on the type and extent of damage and the services available. Be sure to include items in the building on loan (for exhibition, etc.) and materials brought in on approval or for appraisal.
- determine the kind and degree of damage that materials in each location have sustained. These will be "gross" designations, not on an item-by-item or box-by-box basis, but

(depending on the extent of the disaster) on a range-by-range, cabinet-by-cabinet, or room-by-room basis.

- identify any parts of the collection that should be written off as a loss.

Members of the disaster team will be called to the site as outlined in the Response Procedures section above and the Communication Plan (Appendix F).

Work Crews

1. Each work crew will have a team leader.

2. So they can readily be identified, team leaders will wear _____ *[specify a distinguishing garment such as different-colored vests, hard hats, special arm bands, etc. Make sure a supply of these items is included in the disaster supply stockpile, listed in Appendix B1]*.

3. Regardless of usual reporting lines, team leaders will have full authority over the members of their work crews.

4. If on-site training is required, it will be provided by _____ *[specify the Recovery Coordinator or other position]*. If more extensive training is needed for staff, volunteers, or temporary workers, it will be organized by _____ *[specify the Personnel Manager or other]* and led primarily by _____ *[specify the Training Instructor or other position]*.

Packout

Materials must be removed from affected areas, either for immediate drying in a stable location within the repository, for transport to a cleaning/salvage area on the base/campus, or for transport to a freezer facility or to a commercial drying facility. If the option of on-site dehumidification is to be used, only **soaked** items need to be removed.

Execute packout operation in the order determined by the Recovery Coordinator, based on the Salvage Priorities list (pages _____ *[insert appropriate page numbers]* of this plan) and the degree of damage. If a full range of recovery services is available, it is generally appropriate to begin working on the wettest materials, then deal with those that are merely damp. However, if the organization is limited to air-drying using staff resources, it may be better to begin with those that are least damaged and therefore most easily salvaged.

Packout procedures depend on whether materials are being transported to a nearby area for immediate drying or to an off-site freezer or drying facility. The latter requires more careful packing and more thorough documentation.

Depending on the nature of damage and possible logistical constraints, each work crew in the packout operation will generally consist of the following:

a. crew leader: ensures smooth work flow, alleviates bottlenecks, troubleshoots
b. box assembler: sets up boxes, milk crates, ResCubes, or other containers
c. retriever: removes materials from shelves, cabinets, floor, etc., attempting to pull materials of similar size for each container
d. wrapper: cuts freezer/waxed paper or has pre cut sizes on hand
e. packer: takes items from retriever and wrapper, and boxes items
f. sealer: seals and (working in concert with record-keeper) labels containers
g. record-keeper: keeps a written packing list
h. transporter(s): moves containers from packing area to pallet, elevator, stairs, etc.

To move materials within the building during packout, use book trucks, hand carts, or dollies located in _____ *[give location(s)]*. Metal book trucks and carts are preferable. If only wooden ones are available, they should be well covered with heavy plastic sheeting to prevent damage to their finish.

Take the following precautions if materials are to be transported in **cardboard** boxes:

- Boxes should be no larger than 1.5 cubic feet.
- Line the boxes with heavy-duty trash bags before placing wet materials inside. This will prevent the boxes from becoming soggy and collapsing.
- Do not stack boxes more than 4 high. The boxes can be stacked on pallets and the pallets can be shrink-wrapped to prevent slippage during transportation. Plastic pallets are preferred, as they do not absorb water and are lighter. A fork lift can then be used to move the pallets onto trucks or to the drying area.

If possible, loosely sort materials according to the degree of wetness (soaked, damp, or dry). Pack like materials together e.g., damp records or volumes in one box, soaked ones in another, and so on.

Bound volumes: Load into boxes or milk crates for transport. Place normal-size volumes in a "spine-down" position. Pack large volumes flat in boxes. If time allows, loosely place sheets of freezer paper or waxed paper around every volume (or every other volume). Boxes should be packed only about 75% full to allow for swelling.

Files: Place folders in boxes or milk crates. Place the folders vertically in boxes (standing as they would in a file drawer). Fill boxes only about 75% full to allow for swelling.

Photographic materials: Most can be left in cool, clean water for a few hours until ready to dry or send for reprocessing. See further details in Appendix Q2, Emergency Salvage of Photographs.

Microforms: Place in cool, clean water until ready to transport for reprocessing. See further details in Appendix Q3, Salvage Procedures: Microforms.

Oversized prints and drawings: Pack in map drawers, bread trays, shallow flat boxes, or on heavy cardboard or plastic-covered plywood.

Audio and videotapes: Keep wet. Pack vertically in plastic bags or containers with cold water.

Computer diskettes: Keep wet. Pack vertically in plastic bags or containers with cold water. See further details in Appendix Q4, Salvage Procedures: Computer Media.

Computer tapes: Pack vertically in a plastic container and fill with clean water. See further details in Appendix Q4, Salvage Procedures: Computer Media.

Documentation

For inventory control as well as insurance purposes, it is necessary to know the condition and disposition of materials. Which were destroyed? Which need to be removed or replaced? Which were unharmed or sustained only minor damage? Which were damaged but are salvageable?

As materials are removed, one team member will label each container on all four sides with a brief designation of its contents. Describe contents by shelf, range, or call number, by cabinet or drawer, by record group or series, and so on. If time allows, also indicate the number of volumes or archives files in each box, describe the damage (e.g., "wet," "dry," "smoke," "mud," etc.), and indicate the salvage priority of items in the box. If materials are going to different areas (e.g., some to the rinsing stations, others to the air-drying area, and some to a freezer), also note the destination of each container. It is also a good idea to indicate the person who examined the box and decided on salvage priority and action to be taken. A typical box might be labeled as follows: *[Note: If you want boxes labeled in this way, you might have adhesive labels pre-printed and include them in your disaster stockpile.]*

BOX #24	
CONTENTS: PR400 - PR500	PRIORITY: ①
QUANTITY: 20 vols.	TO: Freezer
CONDITION: wet/mud	EXAMINED BY: J. Doe

If there is a large quantity of containers, give each a brief designation (e.g., floor/section designation and box number), and use a written inventory/packing list to record detailed information regarding contents, damage, and priority. A sample packout list is included in Appendix L, Forms.

Throughout the salvage operation, it is also useful to document various decisions made (particularly the decision to discard) and who made/authorized them. This may be the responsibility of the _____ *[specify the responsible position]*.

The Photographer will take photographs or videotape the salvage operations to document the recovery effort.

Removal

If elevators are working, they will be used. If not, the following strategies may be used: *[Specify alternate means. Some possibilities are: use of "human chain," laying plywood on stairs to create ramps for sliding boxes down, sliding boxes out windows onto ramps, removing boxes out windows into dumpsters suspended by cranes.]*

_____

_____

_____

Rinsing

Materials may be rinsed before drying or freezing if they have been subjected to mud, sand, or other dirty deposits and if adequate personnel and time are available. The objective of the cleaning is not to make the materials pristine, but to remove gross deposits.

If items have been damaged by salt water--e.g., due to a hurricane or flooding from sea water--it is especially important to rinse materials.

Never use these rinsing techniques on materials with soluble inks (watercolors and many manuscripts), animal skins (leather, vellum, or parchment), or works of art on paper including iris inkjet printing or digital prints. If a book is already bleeding out its color, do not rinse.

Select an appropriate area for the rinsing operations. It may be a loading dock, parking lot, or outdoor area. Key requirements are that it have access to running water, and have good drainage or be sloped so that water does not stand in the area. The following areas are most likely to be

suitable: *[Specify locations, and give the name and phone numbers of the person or unit that can authorize your use of the space.]*

Location	Contact	Phone: Office/After-hours

Personnel working in the rinsing area should be provided with rubber boots and gloves and waterproof clothing. These safety supplies are available from _____ *[specify the position/office that can provide them, or the storage location in which they are maintained]*. If the water has been contaminated by sewage or other contaminants, workers will have additional protective gear as recommended by the Safety Officer.

The rinsing stations may be set up in either of the following ways, depending on the type of rinsing that is needed:

If deposits are so light that a single brief rinsing will remove them, each station may consist of one garden hose with a spray nozzle.

- Rinse individual folders or volumes one at a time, holding the folder/volume tightly closed to avoid transferring dirt between the pages.

If deposits are heavy:

- Set up a series of 3-8 large (30- to 50-gallon) plastic garbage cans.
- Have a garden hose running into each can, with the nozzle resting at the bottom, and turn water on to provide a slow but continuous flow into each one.
- Workers will take each item to the first can, hold it firmly closed and immerse it, move to the second can and immerse the item, and so on through the line.
- Keep a supply of sponges at the last can, so that mud can be lightly dabbed off there.
- The last station will have a hose with spray nozzle so that workers can rinse materials under a fine spray.
- Gently squeeze excess water from volumes or folders.

Do not attempt to remove mud or stubborn stains during the rinsing process, for that would significantly slow down the operation. In addition, it might damage the materials, and it usually drives mud and stains even deeper into paper fibers, making restoration even more difficult.

The same procedure may be used for photographic materials and computer media, except that shallow dish pans or photo processing trays may be placed on tables and used instead of garbage cans.

Once materials have been rinsed, they may be transferred to the air-drying area or packed for transport to a freezer or drying facility as outlined above in the packing instructions.

Freezing

Freezing may be used as a stabilization technique for wet materials, especially paper-based ones. It should be used whenever materials cannot be dried within 48-72 hours, because wet materials are at great risk for developing mold if the temperature is above 70°F, especially in high-humidity conditions. In addition, bound volumes cease swelling and inks cease "bleeding" or diffusing once frozen. In a medium-to-large scale disaster, freezing "buys time" for the organization: once the materials are stabilized by freezing, funds can be obtained, drying options and vendors can be evaluated, and the staff can take a break after the taxing work of packout. There is no limit on the amount of time that materials may be left frozen. In fact, paper tends to dry slightly while in a freezer.

Bound volumes and paper records are suitable for freezing. In a large-scale disaster, microfilm and most other photographic materials can also be frozen, though that is not ideal. Historic photographs (such as daguerreotypes, tintypes, ambrotypes) should **never** be frozen.

For best results, use a commercial blast freezer, one that freezes materials at -10°F or lower. Commercial freezer facilities for our organization are listed in Appendix B2, Suppliers and Service Providers.

For small volumes of materials, the following freezers within the organization may be used:
[Dining facilities on the base may have large walk-in freezers suitable for small volumes of wet materials, but investigate whether health regulations allow you to store library/archival material in food storage facilities. An alternative is to use self-defrosting deep-freezes in staff members' homes.]

Location	Contact	Phone: Office/After-hours

In an area-wide disaster such as a flood or hurricane, there may not be a local freezer facility. In that case, we may use a refrigerated truck for transporting materials to a remote facility or for temporary cool storage on-site. While a truck will not freeze the materials, it may keep them cool enough to prevent mold growth. Sources of refrigerated trucks are listed in Appendix B2, Suppliers and Service Providers.

Drying Techniques

Appendix Q1, Drying Wet Books and Records, explains the most commonly-used basic drying techniques: vacuum freeze-drying, air-drying, and on-site dehumidification. Use that text to outline your plans in this section, revising and expanding the text below. You may put additional details in Appendix Q or another appendix. Please note that vacuum thermal drying is described in Appendix Q1, but it is not a widely-used option because the materials are heated, staying wet while they dry and causing additional distortion.

When materials are to be air-dried, the following procedures will be used. *[Specify the location to be used for air-drying, responsibilities of various personnel (e.g., for gathering supplies, carrying out the work, etc.), and other procedures suggested in Appendix Q1, Drying Wet Books and Records.]*

_____

_____

_____

If materials are to be commercially dried (via freeze-drying or vacuum-drying), take the following steps. *[Include instructions about who is authorized to contact outside suppliers, where materials may be frozen prior to drying, etc.]*

_____

_____

_____

Materials may be dried on-site via large-scale commercial dehumidification if a large number of collection materials and building furnishings are damp but not soaked. *[Include instructions about who is authorized to contact outside suppliers, where materials may be frozen prior to drying, etc.]*

_____

_____

_____

Fire Damage

Materials involved in a fire are likely also to suffer water damage, and recovery techniques outlined here may be used. They also may be charred (either completely or just around the edges), may have smoke/soot deposits, and are likely to have an odor. The following techniques are appropriate for bound volumes and paper records. When dealing with fire damage to special materials (art works, photographs, magnetic media, computer equipment, etc.), consult one of the conservators or other specialists listed in Appendix B2, Suppliers and Service Providers. Special procedures for computer media are outlined in Appendix G, Protecting Information Technology.

Charred Materials

Damage caused by extremely high temperatures is irreversible. However, the information on charred materials sometimes can be recovered through special photographic methods. These methods are usually carried out only in forensic science laboratories and are only available in exceptional circumstances. In the absence of professional help, do not attempt to open charred bundles, for such handling will result in further damage.

Even if materials are not charred beyond recognition, exposure to high temperatures will cause the paper to become extremely brittle. Such records should be evaluated. Some may be discarded, and others may be microfilmed or photocopied to preserve the information.

If edges of bound volumes are charred or badly smoke-damaged, they can be sent to a library binder, who will remove the binding, trim the edges of the paper, and rebind the volumes. A list of certified library binders is available from the Library Binding Institute (see Appendix B2, Suppliers and Service Providers); others may be found in the Yellow Pages.

[Insert text, perhaps drawing from the preceding paragraphs of this manual, to outline your plans and preferred service providers for dealing with fire-damaged materials.]

Smoke/Soot Deposits

If smoke/soot is deposited on the edges of materials, they can be treated in the following ways:

- Send the materials to a binder who can guillotine off the smoke-damaged edges.
- Treat the materials in-house. Vacuum first then use natural latex sponges to remove the smoke from the edges of bound volumes.

- Rare, archival, or special collections materials should be evaluated by a conservator before employing any general-purpose soot/smoke removal techniques.

[Insert text, perhaps drawing from the preceding paragraphs of this manual, to outline your plans and preferred service providers for dealing with smoke- or soot-damaged materials.]

Smoke Odor Removal

Professional companies can deodorize fire-damaged paper materials. There are three major options:

- Some companies essentially "perfume" damaged materials to mask the odor. Many such companies can be found in the Yellow Pages under "Smoke Odor Counteracting Services."

- Materials may be treated in an ozone chamber. Ozone effectively neutralizes the odor. However, ozone is a powerful oxidizing agent that irreversibly accelerates the aging of paper, so it should not be used on archival or intrinsically valuable materials. Companies listed in Appendix B2, Suppliers and Service Providers, provide this service, often in combination with trimming and rebinding of bound volumes. Some states have outlawed the use of ozone, so be sure to check with appropriate safety officials.

- Storage boxes that incorporate zeolites have shown to be effective in odor reduction. Place dried volumes or papers in the boxes, and they may remain there indefinitely. Sources of these boxes are included in Appendix B2, Suppliers and Service Providers.

[Insert text, perhaps drawing from the preceding paragraphs of this manual, to outline your plans and preferred service providers for deodorizing fire-damaged materials.]

Wrap-Up and Evaluation

After the salvage operation is complete, evaluate the effectiveness of the disaster plan. Talk with those involved. Were they sufficiently prepared? Did the plan work? How could it be strengthened? Revise your disaster plan accordingly.

Remember to extend thanks to all those within and outside the organization who assisted in the recovery operation.

Disaster Planning for Museums and Historic Sites: Background

Although this workbook focuses on libraries and archives, the majority of the information and forms found in the workbook can be easily modified for museums and historic sites. There are some differences, however, in how museums and historic sites approach certain aspects of prevention and salvage, and these differences will be addressed in this section.

Most obviously, museums and historic sites normally hold a wider variety of collections. In addition to the documents, books, photographs, scrapbooks, microfilm, and magnetic media held in libraries and archives, the collections of museums and historic sites may include paintings, sculpture, organic artifacts (e.g., bone, hair, ivory), inorganic artifacts (e.g., ceramics, glass, metals, stone – whether decorative or historic), furniture, natural history specimens, and textiles. Each type of collection requires specific salvage procedures and must be handled appropriately during an emergency to prevent unnecessary damage. These more varied collections also require museums and historic sites to consider additional issues when determining salvage priorities.

For museums, both the presence of the general public in galleries and/or buildings and the ongoing exhibition of artworks and artifacts must also be considered in disaster prevention and response. For historic sites, these same concerns, plus the need to maintain the integrity of the historic structure and its contents, must be considered when planning security, fire protection, and disaster response.

These issues are explored further in this background section, and a separate section is provided to guide the salvage of museum and historic site collections. For prevention and other response issues, the user will be referred back to previous sections of this workbook.

Managing the Public

The presence of the general public in exhibit spaces raises several issues for museums and historic sites. These include evacuation plans for exhibit areas and strategies for controlling the movement of visitors through the building or site. The security manager must work with all museum staff (including exhibit designers, administrators, retail shop employees and managers, docents, and security guards) to ensure that visitors to the museum remain safe. Anytime a large number of people are gathered in one space, events such as fire or power failure are a concern—but panic within a crowd can in fact be caused by a variety of situations, including overcrowding. Giving some thought to strategies for maintaining control over the visiting public is very important.

Issues that should be considered include:

Staff Training and Preparation

- Have uniformed security guards or attendants clearly visible within the museum.
- Train security staff to size up a crowd, and to respond quickly and

authoritatively if they feel that a panic is about to occur, or if an emergency occurs that requires immediate evacuation of the area. Remember that there may be only a few moments to prevent a full-scale panic from occurring. Equip security staff with whistles to gain attention or control in a building or on a site.

- Plan for communication between security personnel responsible for public safety. It is best to use personal communication devices (such as an internal radio system) to alert and organize staff in an emergency. Alternatively, hand signals or designated verbal codes can be used to call for help. Security staff should also be equipped with small flashlights to help with evacuation and communication.
- Prepare a written plan for evacuation of the public. Specify who has the authority to order an evacuation. Train all staff to ensure that they can implement the emergency evacuation plan if necessary, and make sure they know who has the authority to activate it. See Appendix I for additional information on preparing an evacuation plan.
- Develop a plan for communicating necessary information to outside authorities (e.g., they need to know what the problem is and approximately how many people are in the museum).

Exhibit design

- Ensure that exhibit labels are large and brief to avoid visitor bottlenecks.
- Orient the visitor throughout the visit, whether through signs, guards, floor plan design, etc.
- If exhibit objects are small and detailed, reduce the number of objects in each gallery or room to avoid overcrowding of visitors.
- Do not put important, small, or detailed objects in the first gallery/room, and place fewer objects in the initial spaces that visitors enter. This also helps to reduce bottlenecks at the beginning of the exhibit or tour.
- Ensure that galleries or rooms are well-lighted and that exits are clearly marked (e.g., use lighted exit signs). Where conservation concerns require low light levels, ensure that emergency lighting and clearly marked exit paths are provided.
- Make sure that exhibit design does not reduce floor space and doorway widths, thereby reducing the size of the visitor evacuation route. Consult with the local fire marshal to ensure that all local codes are met.
- For large exhibits or other special events, assign staff to be in or near the exhibit area(s) at all times in case of a problem. Museums that are undertaking large or particularly popular exhibitions should consider using timed entry to help control the number of people in the building at any one time. Staff must enforce room capacities and limit entrance to prevent overcrowding and the potential for panic situations. This is especially important for school groups and tour groups that add a sudden spike of attendance to a certain room or building.

It is very important to ensure that visitors are moved through the exhibit areas in such a way that overcrowding does not become a problem, and that plans are in place to address any emergency that may occur.

Security

The presence of the general public increases the chance of damage to collections on exhibit—whether through theft, vandalism, or unintended damage due to touching of objects through ignorance or by accident. Physical security systems, access procedures, and overall policies must be designed to reduce these risks.

The basic elements of a security program for museums or historic sites will not be addressed in detail here since they are similar to those for libraries and archives, and they are described in a number of publications—such as the National Park Service's Museum Handbook and the ASIS (American Society for Industrial Security) and AAM (American Association of Museums) *Suggested Guidelines for Museum Security*. This discussion will address the identification and reduction of security risks specific to museums and historic sites. See also the Security section of the Inspection Checklist (Appendix M).

Identifying and Reducing Risks

While security systems are important in protecting museums from theft, other "low-tech" protection measures are just as important. It has been argued that the biggest security risks for a museum are "low-tech" rather than "high-tech" (e.g., disabling the security system when the museum is unoccupied). Instead, a thief might hide in the museum at closing time, walk in disguised as a security guard, or simply pick up an object from the collection during a tour and walk out. It is important to identify all areas of risk and to be both comprehensive and realistic in considering options for reducing risk.

When evaluating the museum's security risks and determining how they might be reduced, consider the following issues:

- Are there times of day when the collections are particularly vulnerable? For example, there may be several hours when there are no tours or security guards, but the security system is turned off and doors are open because staff members are still working in the building.
- Are there written closing and opening procedures? Are they consistent and systematic (e.g., starting at the same spot, moving from top to bottom of the building)? Are staff members assigned responsibility for carrying them out?
- What type of security procedures currently exist? Does the museum have an electronic security system? What does it consist of? Is it monitored 24 hours a day? Are there security guards? Are they present 24 hours a day?
- How many staff are on duty at any one time, and where are they located? If the museum has tours, what is the route for tours, how many visitors are normally on each tour, and how many staff members are with each group? Are all visitors in supervised tour groups or do visitors wander through the exhibits on their own?
- What are the risks of theft from exhibit areas? Are there collections on display that are small, easily hidden, and/or easily sold? Are the exhibit cases locked or otherwise protected? Are objects on display inventoried routinely? If objects must be temporarily removed from cases, are there written procedures to guide this process? Are exhibit cases made of glass or plastic? If glass, are glass-break detectors used? Are cases

structurally sound? Are they well-anchored so that they cannot be removed with the object in them?

- Are objects on exhibit protected from being touched by the public? Are there barriers to prevent visitors from getting too close? Are objects enclosed in cases?
- What are the risks of theft from storage areas? Are there collections in storage that are small, easily hidden, and/or easily sold? What areas are off-limits to visitors, and how are they (or how should they be) protected? What are the access procedures for storage areas? Are storage areas locked at all times? What staff members have access? Can staff enter the space alone, or are they required to work in pairs? Are special precautions taken for valuable collections (e.g., those in locked cabinets or vaults)?
- Are there written procedures for researcher access to collections in storage? Are researchers required to sign in and provide identification?
- Is key control for the building adequate? What staff members have keys, and to which areas of the building?
- Can staff and/or visitors enter the building through multiple doors? How are the doors monitored?
- Is there a locked key cabinet that contains keys to all exhibit cases and cabinets? If so, which employees have the key? Is the cabinet locked at the end of every day?
- Is there a procedure for employees to turn in keys when they leave the institution?
- Are existing locks on doors and windows adequate? Can they be easily picked or broken?
- Does the building have adequate security lighting?
- How would staff members in public areas (e.g., those conducting tours) summon help if needed? Are there "panic" buttons within easy access or at admission desks?
- Are staff members trained in security policies and procedures? How frequently, and what type of training?
- Does the museum have a security manager? Is there a written security policy? Both of these are crucial to effective security. The security manager should report to someone at a high level in the institutional hierarchy, and should be given adequate authority to carry out security duties.

When designing a security plan, remember that while security systems are recommended, lower tech measures can also deter thieves. Making some security measures visible to a potential thief can be a good idea. Strategies such as carefully placed signs drawing attention to police and/or guard dog presence, performing head counts during historic house tours, and instructing tour guides to "accidentally" set off an alarm by stepping off the tour route have all been used as deterrents.

Designing Security Systems

A basic security system provides perimeter protection (e.g., secures doors and windows) and protection of indoor spaces using motion detectors. The entire system consists of sensors/detectors, a control panel (which receives signals from the sensors and triggers an alarm when needed), and reporting devices (either by sounding an alarm or by sending a signal to an off-site location, such as a security company). While a detailed overview of electronic security systems is beyond the scope of this

discussion, the design of museum security systems poses a number of challenges that should be considered. These include:

- What are the institution's goals for preventing theft? How long does it take emergency responders to get to the building? Is the goal to actually prevent a thief from removing objects? If so, local enunciators should be considered, to gain immediate attention and discourage the perpetrator from completing the theft or vandalism. Overall, what will be required to achieve the institution's goals for security?
- Will the intrusiveness of detection equipment be a problem? Some feel that security equipment alters the look of a room and affect the visitor's experience—this can be a particular problem for historic sites; see the separate discussion below.
- Will there be any problems with placement of motion detectors? This can be problematic due to the high ceilings in some museums. There is also sometimes resistance to putting detectors on the walls. In addition, museum galleries are often subdivided for specific exhibits—this may require changing the position of detectors periodically so that they continue to function properly. Changing exhibitions also mean different collections in different locations (e.g., an exhibit of paintings vs. an exhibit of sculpture), and new collections may obstruct existing detector arrangements.
- If compromises must be made in the number of interior and perimeter detectors, carefully analyze the museum's risks to determine the best setup for the security system. If there is a significant risk of someone staying behind in the museum after closing, extensive interior motion detection may be appropriate, rather than concentrating only on perimeter detection. Or it may be sufficient to place detectors at strategic spots (e.g., stairwells, outside elevators, inside gallery doors and windows), and/or to set "traps" with detectors that limit how far an intruder can go without setting off an alarm.
- When installing detectors, use high quality dual technology detectors to minimize false alarms and establish staff confidence with the system.
- How complex should the security system be? Does the museum have 24 hour security staff to operate it? If regular staff will be expected to operate the system, it will need to be relatively simple (e.g., a single alarm panel or perhaps several panels operating as a system, as opposed to a PC-based control system).
- Is there redundancy and backup for perimeter alarms and locks? For example, there might be glass break detectors and motion detectors for a door, and there might be a battery backup to ensure that magnetic closures continue to work in a power failure.
- Consider special protection for high security areas such as storage rooms, vaults, and conservation labs. This might consist of saturation motion detection, a separate security system, closed circuit television (CCTV) monitoring, card swipe access, etc.
- Wireless transmitters can be a convenient way to protect objects because they do not require running wires to and from objects, but be aware that it can be difficult to detect tampering with these systems. These systems are also problematic in cold

weather, especially in historic buildings with inadequate climate controls.

- Keep in mind that visible detectors or other security equipment such as CCTV can act as a deterrent to thieves. Note, however, that although CCTV allows for one person to monitor multiple spaces and locations, it should never replace actual response to an alarm. Local enunciators will also immediately deter thieves. In addition, fake cameras or security system stickers can be a cheap deterrent until real systems can be installed.
- In all cases, an incident log should be maintained for the security system, to analyze how the system is working and what needs to be done to eliminate false alarms or system bugs. If the staff develops a dislike for the security system because of false alarms, then staff members may not use the system properly, and it will not work effectively.

Whatever electronic security system is used, it should never be the museum's only protection. Remember that most thefts occur during working hours and through human error—so a broad-based security plan and ongoing security training for staff are both crucial.

Special Concerns for Historic Buildings

Many of the security issues discussed above are also relevant for historic sites. However, the need to avoid changes to the original fabric of a historic building poses additional challenges for the installation of security equipment. It is very likely that installation of such equipment in a historic building will be more time-consuming and expensive than in a modern building. Be aware that compromises may need to be made between cost, level of protection, and the effect on the building's historic character.

Issues specific to historic sites include:

- *Wireless systems*. Alarm systems should be hard-wired whenever possible, as wireless technology is not yet considered reliable enough for this application. However, if hard-wiring is impossible in a historic building (whether due to the difficulty of running wires or the lack of electricity or phone lines) wireless alarm systems with a cellular phone that carries the alarm signal to an offsite monitoring station can be an option. Remember, however, that these systems are problematic in cold weather, especially in historic buildings with inadequate climate controls.
- *Hard-wired systems*. Wires can be concealed within walls and trim, but this brings with it the chance of damaging the building. It is also possible to run wires on the surface of walls or ceilings without having to drill into walls or trim (perhaps hidden under moldings, or placed where they are unobtrusive), and to place detectors where they can be partially concealed. However, historic museums should also consider the possibility of simply placing smoke and/or motion detectors and wiring out in the open, where they may not be noticed by visitors who are used to seeing them in modern buildings. Also keep in mind that visible detectors or other security equipment such as CCTV can act as a deterrent to thieves. When deciding whether or not to conceal wires, it is also worth considering that as wireless technology continues to mature, wiring may not be necessary at all in future—and thus the current investment

required to completely conceal wiring may not be worthwhile.

- *Motion detection*. Options for situations in which conventional motion detection is not permitted include microwave detectors placed inside closets or under beds, and portable detectors that are set in place by guards each night. These types of systems are less desirable because they introduce the possibility of human error, but they may be the only alternative in some situations. Also, consider how placement of the furniture in historic rooms will affect the functioning of the detectors. While it is important to make sure that furniture is not blocking detectors (especially when furniture has been rearranged), note that furniture can also be used to hide detectors from view.
- *Locks*. Locks on historic buildings are often not as effective as modern locks. Spring latches, key-in-knob locks, and locks installed with screws ½ inch or less in length can be problematic. Deadbolts should be more than ¾ inches long. If possible, metal or solid-wood core doors are recommended. If it is not possible to update the locks due to the need for authenticity, other security measures become even more important.

When designing a security system, it is essential to consult with a security system designer who is familiar with the construction and preservation requirements of historic buildings and a curator/conservator conversant in the physical needs of the structure and objects.

Fire Protection.

Statistically, the primary cause of museum fires is electrical systems, with the second being arson, followed by other equipment, open flames, heating equipment, smoking, and cooking equipment.[6] See Appendix J: Fire Safety for a general overview of fire detection and suppression systems; this information is applicable to both libraries and museums. See also the Fire Safety section of the Inspection Checklist (Appendix M). Additional specific concerns relating to museums and historic sites are discussed here.

In addition to considering the safety of the building and collections, museums and historic sites must comply with national and local life safety codes, which have various requirements to ensure that occupants of the building can escape safely in the event of fire. These requirements include: size and fire resistance of exit paths; how well the building materials prevent fire from spreading; fire detection and suppression systems; and planning for evacuation of occupants.

General Concerns for Museums

Collection storage. In addition to smoke detection and fire suppression systems, all collection storage rooms should be equipped with manual fire alarm pulls and emergency lighting. If possible, electrical panels, water pipes, utility control panels, and portable space heaters should not be located in storage areas. Care should be taken to store any hazardous materials according to the requirements of local and NFPA fire codes (e.g., cellulose nitrate film, or specimen collections stored in combustible or toxic solutions).

Compact shelving. An increasing number of museums have installed compact shelving

[6] NPS Museum Handbook, Part I (2002), p. 9:13.

for storage of collections, since this can add significant storage space. However, compact shelving increases the danger of damage to collections because the closed shelving holds heat and smoke inside (causing the fire to burn longer before being detected) and keeps water from suppression systems from reaching the fire. More sprinkler heads are needed to protect a compact shelving area than a conventional shelving area, and fire professionals recommend the installation of vertical metal sheeting every 2-3 bays to prevent the sideways movement of fire.

NFPA 909: Code for the Protection of Cultural Resource Properties—Museums, Libraries, and Places of Worship, 2005 Edition recommends that fire detection and suppression systems designed for spaces with compact shelving take into account the number of shelving units, the separation between them, and the type of materials to be stored on them. Tests done by the National Archives and the National Library of Canada have shown that leaving a small open space between the compact shelving units will reduce damage from fire.

Sprinkler systems where compact shelving is installed should be wet pipe, single interlock pre-action (e.g., water flows into the pipes once the detection system is activated), or single non-interlock pre-action (e.g., water flows into the pipes when the detection system is activated or when enough heat is present to open a sprinkler head). Double interlock pre-action systems are not recommended, because in those systems water does not flow into the pipes until the detection system has been activated and there is enough heat to melt the element in a sprinkler head and cause it to open. If compact storage is installed in an existing storage area, *NFPA 909* recommends that the existing systems be modified accordingly.

Exhibits. During the exhibit design process, it is a good idea to review the plans with the fire marshal or other fire safety officer, to ensure that all fire safety requirements have been met and that any changes in the exhibit space (e.g., temporary walls, narrowing of doorways) will not adversely affect fire safety or require changes to existing detection and suppression systems. *NFPA 909* recommends that all exhibits be constructed using noncombustible or fire retardant treated materials, but recognizes that this may not be possible in situations where such materials would endanger objects in the collection.

Conservation laboratories. These facilities can pose a number of potential hazards. Most contain a variety of toxic and flammable substances that are used in conservation work. Hazards can include improper storage, chemical spills, and damage caused if conservation activities are not shut down properly in an emergency. If a museum has a conservation laboratory, it must comply with the relevant NFPA standards regarding storage of flammable and combustible liquids and storage containers. Procedures must be devised for responding to a chemical spill or leak or toxic gases (see Appendix E, Chemical, Biological, and Radiological Hazards). In addition, procedures must be prepared to guide shutdown of conservation treatments (solvent use, etc.) in an emergency. Staff must be trained in all emergency procedures.

General Concerns for Historic Sites

Many historic buildings are wooden structures and thus particularly vulnerable to fire. But other types of historic structures

can also be vulnerable due to insufficient fire detection and/or suppression systems, or because of activities (cooking, use of candles, etc.) that occur inside or near the historic building.

As with security, fire protection is complicated by the need to avoid compromising the historic character of the building. For many years, historic buildings were bound by fire codes written for modern buildings—but compliance was often impractical, as it would require significant changes to the building(s). As a result, many historic buildings were (and continue to be) inadequately protected.

In recent years, documents and codes geared more specifically for historic buildings have made the process of meeting fire safety requirements easier. In particular, *NFPA 914: Code for Fire Protection of Historic Structures, 2007 Edition* takes a goal-oriented approach that recognizes the importance of altering the historic building as little as possible. So long as the primary goals of the code are met (protecting occupants from death or injury in a fire or other emergency, and providing a reasonable level of protection for the unique historic structure and its contents), the intent is to allow fire protection system designers flexibility in determining how best to provide fire protection while preserving the building's original character and minimizing changes to the building.

As with any other type of building, a very important component of fire protection is the identification and mitigation of fire hazards. Potential hazards that should receive particular attention in historic buildings include:

- *Exits*. Keep all exits clear of obstructions in case evacuation of staff and visitors and collection objects is necessary. Evaluate the existing exits to be sure there are enough, that they are large enough, and that they have adequate fire resistance. Consult the local fire department for assistance. Also take into account any special events or exhibits that will result in larger numbers of visitors than usual—these may require alternative evacuation plans and additional staff training.
- *Combustible materials*. Packing materials such as shredded paper, bubble wrap or Styrofoam peanuts, and rags that have paint or furniture polish residue, are common hazards. If such materials must be kept, they should be stored in metal containers with tight fitting lids. In addition, fire may spread more quickly in historic rooms with layers of paint and wallpaper, wood paneling, and/or low ceilings—and those that are crowded with furnishings and other items. This must be taken into account when planning for evacuation and for fire detection and suppression systems.
- *Open flames*. Historic sites often use candles, oil lamps, fireplaces, forges, and other such equipment. *NFPA 914* recommendations include: keeping an appropriate fire extinguisher within 30 feet of any open flame, constantly monitoring activities that involve open flames, keeping candles at least 4 feet from window treatments or wall hangings, covering fireplaces with a fire screen, extinguishing all fires prior to closing of the building to be sure that they are out, and training staff in proper response procedures. A fire blanket should be available to staff or visitors, especially near working fireplaces.

- *Chimneys*. *NFPA 914* recommends that chimneys be lined, provided with a spark arrestor, and inspected and cleaned annually.
- *Building construction*. Do the building materials provide adequate fire resistance, and is the interior of the building compartmentalized to protect against the spread of fire? Doors and stairways are obvious means for fire to spread, but in historic buildings other problems can include voids in floors or ceilings, heat that is conducted from hearth slabs to wood timbers, etc. Again, the local fire department and *NFPA 914* will be helpful in determining whether the building's fire resistance needs to be improved and how this might be done. In larger buildings, it is sometimes necessary to install doors in corridors to minimize the spread of fire (see the General Services Administrations *Fire Safety Retrofitting*, referenced in Further Resources). It is also sometimes possible to improve the fire resistance of existing historic doors. To help in this process, the U.S. Department of Housing and Urban Development's *Fire Ratings of Archaic Materials and Assemblies* (reproduced in *NFPA 914*) provides fire ratings for construction materials used in buildings dating from the 19th to mid-20th centuries.
- *Site problems*. If the site has more than one building, how close together are they? Is there sufficient space for firefighting vehicles and equipment to access the building easily? Are any of the buildings built with CCA treated wood that would release toxic fumes when burned?

Fire Alarms, Detection Systems, and Suppression Systems

It is recommended that museums and historic buildings be equipped with fire alarms, fire detection, and fire suppression. It is crucial that a qualified fire protection system designer (with experience designing for museums and/or historic buildings) be consulted when any new systems or changes to existing ones are planned.

Less intrusive options for fire protection equipment and installation continue to become available, some of which include:

- *Reuse of existing fire alarm locations.* Where possible, it is desirable to mount newer alarms in place of existing ones. This prevents the creation of new holes in historic walls and other surfaces. The General Services Administration's *Fire Safety Retrofitting* (cited in Further Resources) provides more information.
- *Reducing the impact of conventional smoke detectors*. Recessed (as opposed to surface mounted) smoke detectors are available. It is also possible to paint the housings of conventional smoke detectors to help them blend in with the surrounding architecture. It is best to have this done by the manufacturer to avoid damage to the detector. If it is done in-house, the detector head must be disassembled to avoid damage. The detector head itself should not be painted.
- *Projected light beam smoke detectors*. These can be used where installation of detectors on historic ceilings is undesirable, but they are more expensive and there must be a ledge or other place where the beam projector and receiver can be concealed.
- *Air sampling fire detection systems*. To draw air through a network of pipes,

these systems use tiny tubes and other components that can be more easily concealed (e.g., in light fixtures, ledges, and ceilings). The actual detector can be located in another room, and each detector can monitor a much larger area than conventional detectors. Air sampling systems have the additional advantage of being more sensitive than conventional smoke detectors.

- *Sprinkler piping*. In a building with adjacent space that is not historic (e.g., office space), it is preferable to route piping through the less significant space. In a building where all spaces have historic significance, it is best to conceal piping to the extent possible without damaging the building fabric. It may be appropriate to build small enclosures for the piping, to conceal pipes behind ledges or other projections, to align piping with other horizontal elements, and/or to paint piping to blend in with the walls or ceilings. Note that copper piping has a smaller diameter than steel piping. Also remember that *dry line systems are essential in unheated historic buildings* that periodically have freezing temperatures.
- *Sprinkler Heads*. It is generally recommended that sidewall sprinkler heads (these project from the wall and have a deflector that directs most of the water toward the walls) be used in spaces with plaster walls and ornamental ceilings. Pendant heads (which are suspended from a ceiling) should be used when spaces have ornamental wall finishes and plaster ceilings. Glass bulb pendant heads are preferred since they are easier to disguise. Recessed sprinkler heads (in which the head is covered by a cap that pops off to expose the sprinkler head once a certain temperature is reached) may be appropriate in plain ceilings, but care must be taken not to paint them shut. Semi-recessed heads, which project into the room less than conventional heads, should not be used in plaster ceilings because they require large holes.
- *Water mist sprinklers*. As described in Appendix J: Fire Safety, water mist sprinklers have the potential to be very useful in museums and historic buildings. They allow for more flexibility in design and installation than conventional sprinklers (their very small pipes, hoses, and nozzles can be more easily concealed), and they use far less water. Thus far these systems have been approved only for libraries and remote sites that lack adequate water supplies, but in the future the use of water mist systems is expected to increase.

Protection and Salvage of Historic Buildings

Perhaps the most obvious difference in disaster planning for historic sites is the need to consider the protection and salvage of the historic structure(s) and of the site itself, in addition to the collections. In some cases, the building itself is considered part of the museum's collection. The exterior of the structure may provide evidence of changing architectural styles (e.g., roofs, windows, cupolas), while the interior may provide evidence of changes in building technology and/or of activities that were carried out within the building.

See the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (cited below) for general guidelines on preservation, rehabilitation, restoration, and/or reconstruction of historic buildings and sites. There are a number of additional publications and web sites listed in Further

Resources that also focus on the preservation of all types of historic buildings (e.g., public buildings, private residences). The following discussion, however, focuses on disaster preparedness and recovery issues for historic buildings and sites that are being used as museums.

For any historic building or site, protection from natural disasters and provision of effective security and fire protection are frequently complicated by the need to maintain the building's historic character. For historic museums, these concerns can be even more important, particularly when the institution's mission to document a certain historical period does not allow for modern intrusions. The task is further complicated for museums, as they are not just concerned about the safety of staff and visitors and the integrity of the building itself, but also about the safety of the collections within the building.

Preparing for Natural Disasters

Since they may not be constructed as strongly as modern buildings, historic buildings are often particularly vulnerable to natural disasters—which could include earthquakes, hurricanes, tornadoes, high winds, flooding, forest fires or wildfires, and snow or ice storms. In addition to the general preparedness recommendations given in the Prevention/Protection Plan and Response Procedures sections of this workbook, there are specific steps that can be taken to reduce the vulnerability of historic buildings and the surrounding site.

Note that these are general recommendations only; be sure to consult an architect or engineer with knowledge of historic buildings for recommendations specific to your situation. It is also a good idea to document the existing condition of your historic building and/or site through photographs before disaster strikes, and to store that information in an off-site location.

High winds (which can be caused by hurricanes, tornadoes, and other storms) can result in significant damage to a building. In extreme cases, they can lift, overturn, or slide buildings from their foundations. It is important to prevent wind from penetrating inside the building, as this greatly increases the force of the wind on the structure. Preventive actions that can be taken include: making sure that all portions of the building are well attached to each other (e.g., roofs, porches, and cupolas must be securely anchored to the main structure); and reinforcing doors and windows (e.g., through temporary or permanent storm shutters).

For flooding, preventive actions are similar to those for other types of buildings: installing sewer backflow valves; raising heating and electrical equipment above flood levels; keeping emergency pumps and portable generators on hand in case the power goes out; and designing basement and foundation walls so that either water flows through (pressure is equalized on both sides) or the walls are waterproofed and reinforced to keep water out.

Fire protection within historic buildings is covered in a separate section. For detailed preventive measures for wildfires or forest fires, see the Response Procedures section of this workbook. For protection from "natural" fires (as opposed to fires caused by arson, electrical problems, etc.), it is most important to install a lightning protection system on the building, to trim trees and grass near the building, and to remove all debris in the vicinity of the building.

Snow and ice from winter storms can also cause damage to historic buildings—whether through water leaking into the building or from excess weight on the structure from accumulations of snow and/or ice. A structural engineer should be consulted to determine whether the building's roof is able to withstand the weight of snow. If parts of the roof structure are cracked or sagging, or if there are several layers of roofing, there may be a problem. It is also important to keep the drainage system clear and to remove snow from the roof to avoid excessive drifts. The building should be as well-insulated as possible, and care should be taken to prevent ice dams.

See the FEMA Mitigation Division's "How-To" series at www.fema.gov for more detailed recommendations and instructions on preventing damage to buildings from wildfire, flooding, wind, and earthquake.

Disaster Response for Historic Buildings

When historic buildings and sites are involved in a disaster, it is crucial to salvage not just the collections, but also as many elements as possible of the building itself. Use *The Secretary of the Interior's Standards for the Treatment of Historic Properties* as a guide when making decisions on cleanup, salvage, and rehabilitation of the building. Every effort should be made to retain the original elements and materials. Usually it is cheaper to repair than to replace, and it is certainly historically preferable.

The first step should be to determine if the building is safe to enter. Consult the building's or site's utility plan to determine that all utility lines are safe and intact, allowing staff to enter the site safely. Gather an assessment team and carefully assess the damage to the historic building. Local building officials, architectural conservators, historic preservation specialists, structural engineers, and others may need to be consulted. Document the damage with photographs before salvage begins, and create an inventory of everything that is found at the site (which might include furniture, collections, dislodged decorative or architectural fragments, etc.).

Do not throw anything away before it has been evaluated by a professional—items that appear useless might turn out to be important during the recovery process. For example, broken pieces of plaster might be put together temporarily to form a mold that would be used to create a replacement. If historic building elements are so badly damaged that they must be replaced, historic designs and materials that match the original should be used. To the extent possible, keep a record of the original appearance of the building and materials, for use in reconstruction. It is also important to keep in mind that salvage and rehabilitation after a disaster can be used as an opportunity to remove previous inappropriate alterations to the building (e.g., modern elements).

Steps to be taken in recovering historic buildings from flood and fire are noted below. In the case of actual disaster, always consult a historic preservation specialist for further advice.

Flooding. Temporary shoring or braces may be needed to protect the structure (e.g., foundation, floors, and ceilings) as the water recedes. This must be done carefully to avoid further damage to the historic fabric. While standing water must be removed from basements or crawl spaces, it is important

not to do so until the ground water has subsided below the foundation level, or to drain water slowly to keep pace with the level of the ground water. If water is removed from a basement while the ground water level is high, the foundation walls may collapse.

If the sewer system has backed up into the building, this is a health hazard. Precautions will be needed to protect salvage workers, and materials soaked in sewage may have to be discarded. The building will need to be thoroughly cleaned before any repairs can be made. Also note that some types of museum collections can pose hazards if damaged. These would include arsenic residue from taxidermy specimens, gun powder, mercury gauges, old medicines, pesticide residues on old farm machinery, etc.

If there is no sewer backup, begin to remove modern water-soaked materials such as non-historic carpeting and wall coverings, insulation, gypsum wallboard, etc. These types of materials need to be discarded. Other wet items—such as furnishings, historic rugs, and other collections—should be removed and dried according to the guidelines in Appendix Q5. Ventilate the building to the extent possible using windows, doors, and fans. Do not use mechanical dehumidification (such as super-dry air), as this might cause further damage to the building. It is acceptable to heat a flood-damaged building to keep it from freezing, but do not overheat.

Historic building elements can be cleaned using nonabrasive household cleaners. Water-soaked historic wall coverings usually must be discarded, but a sample should be retained to document their appearance. It is possible to salvage wet historic plaster, but it must dry gradually and good ventilation is crucial. This requires opening wall cavities, removing insulation, removing baseboards and moldings, and cutting ventilation openings. Wet historic wood floors may swell and warp. It is a good idea to open floor cavities so that both sides of the wood are ventilated during drying.

Fire. If the building has been fire-damaged, it is also important to keep rain and snow out by covering damaged roofs with tarps or roofing materials. Temporary enclosures should be made for doors and windows. A structural engineer (experienced with historic buildings) will be needed to determine what building elements will require bracing (e.g., walls, ceilings, chimneys). When repairs are undertaken, the building should be provided with proper fire protection, as described above.

For cleaning the interior, HEPA vacuums and dry cleaning sponges can be used to remove dry soot. Dry cleaning sponges are not recommended for oil-based paint, acrylic paint, or vinyl wallpaper, however—or for removal of greasy soot. As with water damage, architectural features should be cleaned and repaired if possible, and even burned or scorched wall coverings and other materials should be salvaged for use in creating reproductions.

Removing the smoke smell after a fire may be quite difficult. Neither thermal deodorization nor ozone treatments should be used in museums or historic buildings. It is recommended that the building be flushed with fresh air and/or that HEPA filters be used to capture soot/smoke particles.

Salvage of Museum and Historic Site Collections

Salvage Priorities

See the Salvage Priorities section of this workbook for a general discussion of factors to weigh in assigning collection salvage priorities. A short discussion of these and other factors in the context of museums and historic sites follows.

Format. Because of the greater range of material types found in museum collections, format must be an important concern in setting museum salvage priorities. Certainly some types of collections are less vulnerable than others to damage and thus might be a lower priority even if they are fairly important—but specific vulnerabilities can be a challenge to identify.

Because museum collections are so varied and complex, it is very difficult to provide general rules for object vulnerability or general instructions for salvage that will apply to all types of collections (or even to all items within a particular type of collection). For example, some ceramic objects may have water-soluble coatings or consolidants that were used when the object was previously treated, or they may have accretions (food residues, ritual use) that are historically significant. These conditions will affect both the object's susceptibility to damage and how it should be salvaged. And some materials within a category are simply more susceptible than others—for example, alabaster is much more water absorbent than marble, and iron corrodes quickly in water, so both might need more attention in a water disaster than other types of stone or metal. Decoration of objects, such as painting, gilding, and inlays, can pose additional complications for salvage.

In terms of general susceptibility to water or fire damage, collections are often placed in the following order: organic materials, metals, ceramics, and stone—BUT, as the examples above show, there will always be exceptions.

It is crucial that an institution conduct a survey of its collections **prior to a disaster**, to identify the specific types of collections that it holds and how they would be vulnerable to different types of disasters (the most common being water and fire). It is highly recommended that this be done in consultation with an experienced conservator, so that the institution will have a good idea of what types of emergency treatments would be necessary and appropriate.

Usage. As in libraries, collections that are frequently used by scholars, students, or others will receive high priority. Note that use of an item or collection for a temporary exhibit, anniversary, or other event may temporarily increase the material's significance. Materials on loan from other institutions may also have priority.

Level of Documentation. Artifacts that have never had a detailed condition report might have a higher priority for salvage than artifacts that have been thoroughly documented and analyzed. The artifact with more documentation is more apt to be covered by insurance, and there is more chance of creating a good facsimile to replace the loss.

Value/Significance. Museum collections may have several different types of value. They are likely to have artifactual value (as objects that document a historical period, culture, religion, etc.), associational value

(linked to important people, places, or events), informational value (providing important data about people, places, or events), evidential value (providing historical or legal proof of an event or action), and/or monetary value (the object's value in the marketplace). Some objects may also be particularly rare or even irreplaceable, in contrast to others that could be more easily replaced.

The Salvage Priorities section of this workbook includes a form for listing priority materials, their relative importance, and their location.

Collection Salvage

As discussed above, successful salvage of damaged object collections will depend greatly on how much pre-planning has been done. It is also important to consult with a conservator experienced with the type of collections that have been damaged before proceeding with salvage.

Moving and handling collections. Museum and historic site staff need to be particularly aware of the dangers that can be posed to works of art and artifacts when they are handled in an emergency situation. If objects are not handled carefully, they may be damaged further from well-intentioned efforts to remove them from danger. Each museum or historic site must make its own decisions about who has authority to move objects, and when.

It is also important for museums to think through the process of moving collections before a disaster occurs. How are the objects installed in exhibits—will special tools be necessary to remove them? Are there some objects that will require multiple people to move them? Where will objects be taken if they need to be moved? Will any objects pose health risks (such as some natural history specimens)? What health precautions will be taken for staff, and where is the proper equipment located? Hand carts, dollies, moving pads and heavy duty cardboard should be available for moving purposes.

Only staff members trained in proper handling techniques should move artworks or artifacts. However, if the objects are in imminent danger of being destroyed, it may be impossible to wait for trained collections staff. In preparation for such a possibility, all staff members should be familiar with basic guidelines for handling objects. See the following section, Salvage Procedures: Museums and Historic Sites, and Appendix Q5 for specifics.

Salvaging object collections. These usually include both organic and inorganic objects. Organic materials (such as leather, bone, ivory, shell, basketry, and wood) are usually the highest priority for recovery because of their susceptibility to water damage. Some may begin to decay, others may become deformed, while others may become very weak when wet, or they may swell and then crack or warp during drying. Organic materials should be air dried within 24-48 hours to prevent mold growth and additional damage. The heat of fire may destroy these types of items, or it may deform them or leave soot deposits that are very difficult to remove.

A variety of damage can occur to inorganic materials as well. Ceramics can pose a number of problems: water can cause clouding of glazes, flaking of surface finishes, and staining from soluble salts or other soluble materials in the object that come to the surface; and fire can cause

fracturing of the object or the surface coating, as well as soot damage. While stone is generally more stable, contaminants in water can be absorbed into porous stone to cause staining, and acidic water can scratch a polished stone surface. The extreme heat of fire can weaken the stone's structure, and soot can be ground into porous stone. Metal is also generally resistant to water, but if it is left wet too long, corrosion may begin. Some metals become very brittle when exposed to high heat, and surface coatings may be damaged by heat or soot as well.

In general, inorganic materials such as ceramics, glass, stone, and metals will be a lower priority than organic materials, but as noted above, there are exceptions. These would include unbaked or low-fired ceramics (e.g., earthenware, unglazed stoneware, terracotta, and sun baked earth—which are particularly susceptible to water damage), and unstable metals (those that are actively corroding)—which should all be dried within 24-48 hours.

In general, object collections should be air dried. If objects have been immersed in salt water or other contaminated water, they should be kept wet until a conservator can be consulted. Care should be taken with objects that may need manipulation to keep their shape or retain their flexibility while drying (e.g., leather); objects (e.g., ceramics) that may fall apart due to previous mending with water-soluble adhesives; composite objects (e.g., metal with leather components) that may be particularly fragile; and objects with applied finishes that might flake off easily. For some types of objects with fragile surfaces, drying can be done from the opposite side using absorbent materials.

Salvaging textiles. It is important to handle wet textiles with particular care, since they become very heavy and can be easily torn or otherwise damaged. The highest priority for drying textiles should be those with dyes that are bleeding—these should be treated immediately. Other textiles should be air-dried within 48 hours or frozen if drying is not possible within that time. It is possible to freeze-dry some textiles, but this should not be done without consulting a textile conservator.

Basic drying techniques are as follows: remove excess water as quickly as possible by blotting with sponges or towels. Lay out textiles on flat surfaces covered with plastic sheeting, and lay blotters or clean toweling on top of them. Replace these when they are saturated, until the textile is dry.

Salvaging furniture. Water from flooding and/or heat from fire may cause furniture joints to weaken as the wood swells and becomes heavier. Water may cause damage to veneer and other decorative finishes, hardware may rust, and mold may grow. Soot may also damage fragile finishes.

Particularly sensitive objects, such as those that are gilded, polychromed, or veneered, should be treated by a conservator immediately. Otherwise, wood furniture can be air-dried. If furniture must be moved to an area where it can be safely cleaned and dried, do so carefully, moving it by its lowest structural member. Water should be removed from the surface of furniture by carefully blotting with clean absorbent material. Circulate the air, but do not aim fans directly at furniture. It is important to dry wood furniture slowly to avoid warping and cracking of the wood. Upholstered seats or cushions should be wrapped in toweling or other absorbent material to dry.

It is a good idea to remove iron hardware (if this can be done without damaging the object) because it may cause staining. It is also important to salvage any small pieces that may have become dislodged because they were attached with water-soluble glue.

Salvaging natural history collections. Natural history collections may include biological (wet and dry), geological, and/or paleontological specimens. Materials within these collections that need priority attention in the event of water damage are: animal skins, taxidermy mounts and herbarium specimens (due to their susceptibility to mold growth); and wet specimens (which should not be allowed to dry). If specimens preserved in fluid have containers that are broken, the specimens should be rinsed and placed in fresh liquid, and a conservator should be consulted. Some natural history collections may contain toxic materials, so always wear protective clothing and use a respirator if necessary when working with these collections.

When salvaging any museum objects or artifacts, it is crucial to ensure that any identifying documentation (tags, labels, etc.) is kept with the items during the salvage process. See the following section, *Salvage Procedures for Museums and Historic Sites*, and Appendix Q5: Salvage Procedures: Artifacts and Museum Objects for more detailed instructions on handling, packing, and drying museum and historic site collections.

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National Institute of Building Sciences. *The Whole Building Design Guide* web portal. See the *Design Objectives: Historic Preservation* section of the site at http://www.wbdg.org/design/historic_pres.php.

Salvage Procedures: Museums and Historic Sites

This section assumes that all the items covered in the Response Procedures section have been addressed. In addition, before launching the salvage operation, you must make several key decisions:

1. *Which materials will be salvaged and which discarded?*
2. *Will the salvage operation be handled by your personnel, or will some or all of it be contracted to conservators and/or disaster recovery specialists?*
3. *How will the materials be salvaged? The background information in this section and in Appendix Q5: Salvage Procedures: Artifacts and Museum Objects provides details for specific types of museum collections. Salvage Procedures: Libraries and Archives, and Appendices Q1-4 discuss options for books, archival materials, and other materials commonly found in library and archives collections.*

Before working on this section of the plan, you should understand the most commonly-used drying techniques—air-drying, dehumidification, freezer-drying, and vacuum freeze-drying (see the explanations in Appendix Q)—as well as which technique(s) should be used on what types of objects, and when it is appropriate to use them. While on-site dehumidification (explained in "Drying Wet Books and Records," Appendix Q1) can be an appropriate salvage method for libraries and archives, it is not appropriate for museum collections or for historic buildings and their contents, because it may damage fragile collections and building fabric. Vacuum freeze-drying is an appropriate option for many books and archival materials, but most other museum collections (with the exception of some natural history specimens and textiles, which might be freeze dried in some circumstances) must be air dried.

Text in this section provides basic information and general guidelines, but it will require significant revision based on local decisions.

Before salvage begins, the _____ *[specify Operations Manager, Recovery Coordinator, or appropriate other position]* will:

- Determine the salvage priorities for various parts of the collection. These will be based on the priorities given in the Salvage Priorities list and Appendix P, but adjusted based on the type and extent of damage and the services available. Be sure to include items in the building on loan (for exhibition, etc.) and materials brought in on approval or for appraisal. Have a discard plan and a deaccesion plan.
- determine the kind and degree of damage that materials in each location have sustained. These will be "gross" designations, not on an item-by-item or box-by-box basis, but (depending on the extent of the disaster) on a range-by-range, cabinet-by-cabinet, or

room-by-room basis. The disaster site must be thoroughly documented through notes and photographs.

- Identify any parts of the collection that should be written off as a loss.

Members of the disaster team will be called to the site as outlined in the Response Procedures section above and the Communication Plan (Appendix F).

All salvage decisions will be made in consultation with the appropriate collections staff and/or conservators (in-house or external), as follows:

Type of Collection	Curator/Collections Staff	Conservator
(e.g., ceramics, textiles)		

Work Crews

1. Each work crew will have a team leader.

2. So they can readily be identified, team leaders will wear _____ *[specify a distinguishing garment such as different-colored vests, hard hats, special arm bands, etc. Make sure a supply of these items is included in the disaster supply stockpile, listed in Appendix B1]*.

3. Regardless of usual reporting lines, team leaders will have full authority over the members of their work crews.

4. If on-site training is required, it will be provided by _____ *[specify the Recovery Coordinator or other position]*. If more extensive training is needed for staff, volunteers, or temporary workers, it will be organized by _____ *[specify the Personnel Manager or other]* and led primarily by _____ *[specify the Training Instructor or other position]*.

Emergency Handling of Collections

If possible, objects should be moved only by curatorial staff members who are already trained in handling procedures for the specific type of object. However, it is sometimes necessary for other staff to handle objects in an emergency. All staff should follow these basic guidelines for handling objects:

- Only move an object if it is absolutely necessary.
- Do not pick up an object until you know where you are going to put it down.
- Do not leave or place objects on the floor.
- Do not drag or push objects.
- Do not layer or stack objects. However, if artifacts must be stacked, a non-adhering barrier should be placed between the two objects (e.g. mylar, polyethylene).
- Do not try to carry a heavy or bulky object alone—get help from others.
- Do not handle or lift a sculpture or piece of furniture by a projecting member (e.g., an arm, head, handle, leg, rim). Hold the object at its strongest point.
- Handle wet objects with care and use supports to move items that may be extremely fragile—such as bone, ivory, shell, leather, textiles, and some natural history specimens.
- Walk forwards, slowly and carefully, when carrying objects.
- If the object is already broken, make sure that you collect all the pieces.
- Make sure that you save any information that is associated with the damaged object (e.g., labels, tags).

Training in handling collections will be provided by _____ *[specify the Recovery Coordinator or other position]*.

Packing Collections

Materials must be removed from affected areas, either for immediate drying in a stable location within the repository, for transport to a cleaning/salvage area on the base/campus, or for transport to a freezer facility, a commercial drying facility, or a conservation laboratory. Transport off-site requires more careful packing and more thorough documentation.

Execute packout operation in the order determined by the Recovery Coordinator, based on the Salvage Priorities list (pages _____ *[insert appropriate page numbers]* of this plan) and the degree of damage. In addition to priorities discussed in the background information above, the Recovery Coordinator may need to take into account whether or not objects can be moved without causing additional damage and the susceptibility of the object(s) to further damage in the near future (e.g., will the object deteriorate further if it is not dealt with quickly, or is it relatively stable).

Depending on the nature of damage and possible logistical constraints, each work crew in the packout operation might consist of the following:

a. crew leader: ensures smooth work flow, alleviates bottlenecks, troubleshoots
b. box assembler: sets up boxes (plastic boxes are preferred), trays, bins, or other containers
c. retriever: removes materials from shelves, cabinets, floor, etc. (see handling instructions above, keep broken pieces together, and keep track of original boxes, labeling, or other documentation)
d. wrapper: provides freezer/waxed paper or other absorbent material; wraps items
e. packer: takes items from retriever and wrapper, and boxes items (using dividers within boxes if necessary)
f. sealer: seals and (working in concert with record-keeper) labels containers
g. record-keeper: keeps a written list of materials and their destination (e.g., air-drying station, freezer)
h. transporter(s): moves containers from packing area to destination

Throughout the salvage operation, it is useful to document various decisions made (particularly the decision to discard) and who made/authorized them. This may be the responsibility of the _____ *[specify the responsible position]*.

The Photographer will take photographs or videotape the salvage operations to document the recovery effort.

If possible, loosely sort materials according to the degree of wetness (soaked, damp, or dry). Pack like materials together—e.g., damp items in one box, soaked ones in another, and so on. Segregate objects with mold growth from other objects. General packing guidelines are as follows:

Bound volumes: Load into boxes or milk crates for transport. Place normal-size volumes in a "spine-down" position. Pack large volumes flat in boxes. If time allows, loosely place sheets of freezer paper or waxed paper around every volume (or every other volume). Boxes should be packed only about 75% full to allow for swelling.

Files: Place folders in boxes or milk crates. Place the folders vertically in boxes (standing as they would in a file drawer). Fill boxes only about 75% full to allow for swelling.

Photographic materials: Most can be left in cool, clean water for a few hours until ready to dry or send for reprocessing. See further details in Appendix Q2, Emergency Salvage of Photographs.

Microforms: Place in cool, clean water until ready to transport for reprocessing. *[See further details in Appendix Q3, Salvage Procedures: Microforms.]*

Oversized prints and drawings: Pack in map drawers, bread trays, shallow flat boxes, or on heavy cardboard or plastic-covered plywood.

Audio and videotapes: Keep wet. Pack vertically in plastic bags or containers with cold water.

Computer diskettes: Keep wet. Pack vertically in plastic bags or containers with cold water. *[See further details in Appendix Q4, Salvage Procedures: Computer Media]*.

Computer tapes: Pack vertically in a plastic container and fill with clean water. *[See further details in Appendix Q4, Salvage Procedures: Computer Media]*.

Paintings on canvas: Pad the corners of the frame or painting with corrugated cardboard, bubble wrap, or newsprint. Transport paintings vertically, and place corrugated cardboard between paintings if necessary. See further details in Appendix Q5.

Works of art on paper: Pack flat in bread trays, flat boxes, etc. The items must be removed from their frames or mats before air-drying or freeze-drying. *[See further details in Appendix Q5]*.

Textiles: Separate small flat textiles and framed textiles with freezer or wax paper and box. Keep large textiles rolled on tubes. Wrap accessories such as fans, hats, and shoes in freezer or wax paper. Box, but do not layer accessories. *[See further details in Appendix Q5]*.

Organic materials: Wrap bone, ivory, horn, and shell individually in damp absorbent material and transport in boxes lined with open plastic (polyethylene) bags. Interleave parchment and vellum with freezer or waxed paper and pack flat in boxes. Pad leather items and basketry with absorbent material to maintain their shape. Wrap small wooden objects in absorbent materials. *[See further details in Appendix Q5]*.

Inorganic materials: If they have been exposed to clean water, wrap ceramics, glass, or stone objects individually with absorbent material and bag or box using dividers to separate items. If they have been exposed to salt water, mud, oil, or other contaminants, keep them wet until a conservator can be consulted. Metals should also be wrapped with absorbent materials. Iron, steel, and copper should be kept apart from other materials because they can cause staining. Copper alloys should be packed in individual containers with silica gel. *[See further details in Appendix Q5]*.

Natural history specimens: Separate animal skins and taxidermy mounts with freezer or waxed paper. To avoid contamination, isolate from other objects in boxes with

plastic sheeting. Herbarium specimens should be separated with plastic sheeting, freezer paper, or waxed paper, and packed in trays or boxes. Trays or boxes with pinned insects should be well-supported, and all pins should be secured. Fluid preserved specimens should be placed in sealed polyethylene boxes with a small amount of alcohol. Wrap geological and paleontological specimens individually with absorbent material.

Rinsing

In some cases it may be appropriate to rinse damaged items before air-drying or freezing. See Salvage Procedures: Libraries and Archives for general procedures for rinsing bound volumes and archival materials. **Never** use these rinsing techniques on materials with soluble inks (watercolors and many manuscripts), vellum or parchment, works of art on paper, or paintings. It may be appropriate to carefully rinse mud and debris off some objects such as basketry, bone, shell, ivory, leathers, ceramics, glass, and stone, metals, and wood—BUT not in all cases. A conservator should be consulted before rinsing any museum objects. Rinsing should be done gently, over a container, and care should be taken to note and salvage any parts of the objects that are dislodged by the rinsing process.

Freezing

Freezing may be used as a stabilization technique for most paper-based wet materials and some museum collections. Where it is appropriate, it should be used when materials cannot be air dried within 48 hours, because wet materials are at great risk for developing mold if the temperature is above 70°F, especially in high-humidity conditions. In a medium-to-large scale disaster, freezing "buys time" for the organization: once the materials are stabilized by freezing, funds can be obtained, drying options and vendors can be evaluated, and the staff can take a break after the taxing work of packing collections.

Bound volumes and paper records are suitable for freezing. In a large-scale disaster, microfilm and most other photographic materials can also be frozen, though that is not ideal. Other types of collections that can be frozen if necessary are parchment and vellum (with the exception of gilded or illuminated manuscripts), textiles (with the exception of painted or stenciled fabric, textiles with beadwork, and costume accessories), and natural history specimens (with the exception of fluid preserved collections, and geological or paleontological specimens).

Many types of museum collections should **not** be frozen, however. Historic photographs (such as daguerreotypes, tintypes, and ambrotypes) should never be frozen. Likewise, do not freeze paintings on canvas; buckskin or other leather objects; bone, horn, ivory, or shell; basketry; ceramics, glass, or stone; metal; wood; or furniture.

For best results, use a commercial blast freezer, one that freezes materials at -10°F or lower. Commercial freezer facilities for our organization are listed in Appendix B2, Suppliers and Service Providers.

For small volumes of materials, the following freezers within the organization may be used:
[Dining facilities on the base may have large walk-in freezers suitable for small volumes of wet materials, but investigate whether health regulations allow you to store library/archival material in food storage facilities. An alternative is to use self-defrosting deep-freezes in staff members' homes.]

Location	Contact	Phone: Office/After-hours

In an area-wide disaster such as a flood or hurricane, there may not be a local freezer facility. In that case, we may use a refrigerated truck for transporting materials to a remote facility or for temporary cool storage on-site. While a truck will not freeze the materials, it may keep them cool enough to prevent mold growth. Sources of refrigerated trucks are listed in Appendix B2, Suppliers and Service Providers.

Drying Techniques

Appendix Q5 outlines procedures for salvage of non-paper media, while Appendices Q1-4 outline procedures for paper, film-based, and magnetic media collections. Use that text to outline your plans in this section, revising and expanding the text below. You may put additional details in Appendix Q or another appendix.

When materials are to be air-dried, the following procedures will be used. *[Specify the location to be used for air-drying, responsibilities of various personnel (e.g., for gathering supplies, carrying out the work, etc.), and other procedures suggested in Appendix Q5: Salvage Procedures: Artifacts and Museum Objects.]*

- _____
- _____
- _____

If materials are to be commercially dried (via vacuum freeze-drying), take the following steps. *[Include instructions about who is authorized to contact outside suppliers, where materials may be frozen prior to drying, etc.]*

- _____
- _____
- _____

Fire Damage

Materials involved in a fire are also likely to suffer water damage, and recovery techniques outlined here may be used. They also may be charred, may have smoke/soot deposits, and are likely to have an odor. Instructions for treating fire-damaged bound volumes and paper records are found in **Salvage Procedures: Libraries and Archives**. When dealing with fire damage to museum and historic site collections, it is always best to consult a conservator who has expertise in the type of objects that have been damaged. See Appendix B2, Suppliers and Service Providers, for conservators and other specialists.

Take these general precautions when dealing with fire-damaged museum collections:

- Evaluate objects carefully. If they are evenly coated with soot, or if the soot is in the form of a fine film, it may be difficult to detect.

- Do not move objects unless absolutely necessary.

- Do not do anything that might smear the soot and force it into the surface of the object. Try not to touch sooty surfaces, and do not wrap objects.

- Inventory all objects to be cleaned, photograph them before and after treatment, and create detailed treatment reports.

While specific cleaning techniques will differ depending on the type of object and the extent of the damage, the following general techniques may be used. Soot can be vacuumed from dry artifacts using a vacuum with a HEPA filter and micro tools. Suction should not be strong, and care should be taken to place gauze or another loosely woven material over the nozzle to ensure that small parts are not sucked into the vacuum. The vacuum tool should not touch the surface of the item being cleaned. Other techniques might include wet methods involving solvents, sponges, mild soap, and/or distilled water; and dry methods using eraser crumbs or soot sponges—but all of these must be carried out only under the supervision of an experienced conservator.

Removing the smoke smell after a fire may be quite difficult. Neither thermal deodorization (which uses high temperature to drive off the smell) nor ozone treatments (which create ozone, an oxidizer that attacks organic materials) should be used for museum and historic site collections. Alternatives include flushing the building with fresh air and/or using HEPA filters

(which should be changed frequently) to capture smoke particles. It will also help to clean the building and contents to the extent possible, including floors, ceilings, walls, curtains, and furniture.

[Insert text, perhaps drawing from the preceding paragraphs of this manual, to outline your plans and preferred service providers for dealing with fire-damaged collections].

Wrap-Up and Evaluation

After the salvage operation is complete, evaluate the effectiveness of the disaster plan. Talk with those involved. Were they sufficiently prepared? Did the plan work? How could it be strengthened? Revise your disaster plan accordingly.

Remember to extend thanks to all those within and outside the organization who assisted in the recovery operation.

Collection Restoration

Background Information

After a disaster, rehabilitation of collections can be the most time-consuming and costly part of the whole process. Even after materials have been dried, much usually remains to be done. Advance planning for personnel, training, space, and services will help provide economies of time and expense. Each repository will have its own rehabilitation needs, and various disasters will result in different needs. The following rehabilitation procedures are among those to be considered:

- hiring and/or training personnel to handle the work
- examining and sorting dried materials according to their rehabilitation needs
- cleaning mud, smoke, soot, etc.
- deodorizing smoke-damaged items
- repair
- binding or re-binding
- reprocessing film or tape media
- microfilming, copying, other duplication
- professional conservation
- fumigation for mold or insects
- rehousing (e.g., boxes, folders, pamphlet binders)
  replacing labels, card pockets, book plates, security tags/strips, etc.
- re-arranging and shelving/filing materials in call-number or other shelving order
- changing catalog records, finding aids, indexes, inventories, etc.
- ordering, receiving, cataloging, shelving/storing replacements
- site rehabilitation, including repairs, new construction, replacement of furnishings and fixtures, shelving

For all the possible rehabilitation activities, the following issues should be considered in the planning process and documented in the written plan:

- How will the steps be carried out?
- Who will be responsible for each?
- Who will supervise?
- Where will the work be done?
- What kind of work flow makes sense?
- Who has authority to discard badly damaged items?
- What funds are available from the operating budget? What resources will be available under self-insurance or other special funds?
- What rehabilitation priorities should be set so that essential services can be restored quickly?
- What can be done by the staff, and when should we use contract services instead?

After materials have been salvaged, some further restoration work will probably be required before they can be reshelved or returned to other storage locations.

1. Storage. Materials that have been water-damaged or mold-infested should be kept apart from other holdings for at least 3 months in a well-ventilated area with good climate control (65° F and 35-45% relative humidity). The following locations may be used for this purpose.

   _____

   _____

   _____

   _____

2. Assessment. _____ *[specify the responsible position]* will evaluate the materials and decide on the next steps:

   - discard/withdraw
   - reprocess and/or duplicate-particularly for photographic and magnetic media
   - replace by microfilming, photocopying, or purchasing another copy or edition
   - repair, rebind, clean, or provide conservation treatment
   - rehouse in new folders, boxes, etc.
   - relabel, replace card pockets, etc.

   Procedures for each are outlined below.

3. Withdrawal. *[Specify who has authority to order the withdrawal or destruction of materials, what record-keeping must be done, and where or how materials will be discarded]*.

4. Reprocessing and duplication. *[Specify procedures and responsible staff. Include reprocessing of photographic film, cleaning and copying of film and magnetic media, and preservation microfilming of damaged paper records]*.

5. Replacement. *[Specify procedures and responsible staff]*.

6. Repair. *[Specify procedures and responsible staff]*.

7. Conservation. *[Specify procedures and responsible staff. If you are not accustomed to procuring conservation services, some background reading will be helpful. See Jan Paris, "Choosing and Working with a Conservator," in Sherelyn Ogden,* Preservation of Library and Archival Materials: A Manual*, cited in Appendix T]*.

8. Rehousing. *[Specify procedures and responsible staff]*.

9. Relabelling and shelf preparation. *[Specify procedures and responsible staff]*.

10. Reshelve. *[Specify procedures and responsible staff. Be mindful that, following significant water damage, paper-based materials typically require about 10% more storage space than before, so they will not fit back in their original shelving configuration]*.

11. Return borrowed materials. *[Specify procedures and responsible staff]*.

Appendix A: Personnel

Background Information for Appendix A1: Disaster Team

The size, membership, and structure of your disaster team will depend on the scope of the disaster. A minor emergency can be handled by a small group working together on a fairly informal basis. The larger the disaster, the more people you will need and the more formal the command structure must be. When small-scale emergencies occur, most of the functions will be handled by collections staff. Librarians, archivists, museum staff, and/or records managers will purchase supplies, set up fans and dehumidifiers, dry the materials, document what was damaged or destroyed, and keep track of costs (including staff time). But in a significant disaster such as a fire in your building, the team must be expanded so that collections staff can focus on the recovery and delegate functions such as purchasing and personnel management to other units within the organization.

Use this appendix as the basis for thinking about the functions that may need to be managed and the jobs that may need to be done in recovering from a disaster. While you do not have to prepare disaster team job descriptions at the level of detail shown here, there are benefits to doing so. Once staff members understand what will be expected of them in a disaster, they are more likely to prepare themselves for it. In addition, detailing responsibilities will help ensure a better response if someone other than the usual staff person has to take this. This is helpful when dealing with co-workers in the library, archives, museum, or records office, but perhaps even more useful as a tool for relating to maintenance, security, and other personnel whose support you will need in a recovery operation. The extensive list of positions and responsibilities here can be copied, revised, or deleted as appropriate for use in your plan.

Your ability to execute the recovery according to plan could be affected by labor contracts, job descriptions, or personnel policies. Be sure the disaster-related responsibilities are clearly written into each position description or contract.

Some disaster duties require work that could be hampered by age, pregnancy, or ability. In addition, some individuals simply cannot cope emotionally with the circumstances of a disaster. Consult with your personnel office about ways to deal with those possibilities. It may be necessary to excuse some staff members from work in a disaster or to reassign them to other units.

Following a major disaster, it is likely that staff members will work around the clock in shifts for the first few days. This requires use of multiple people for most positions, and each is responsible for briefing his/her replacement when the shifts change. Another complicating factor after a natural disaster is that you may have to vie with other units to get the support services you need; for example, hospitals and infirmaries will typically receive top priority. Further, staff members may have sustained significant property damage or injury at home, and you need to be clear about your expectations of them.

When a natural disaster strikes, the federal government may lay claim to members of your staff. Librarians may become traffic cops, records managers may be called to assist with tree-cutting and debris removal, and archivists could be assigned to food and supply distribution.

Take steps to deal with those possibilities. First, as you develop your plan and annually update it, be sure commanders in your organization understand the importance of prompt salvage of your holdings. Second, be sure to have two or three backups for each position in your disaster team. Third, develop plans for recruiting and training volunteers or other supplemental workers. To the extent that you communicate your needs now-during the planning phase-you have a greater chance of receiving support in times of crisis.

In a disaster of moderate scope, the organization can be fairly simple, as illustrated in Figure 1 (p. A14). The Recovery Coordinator would oversee the details of the recovery in consultation with the base commander, library/archives director, or other administrator. This might entail the use of workers to salvage the collections and work with the information technology manager to recover systems and files. Many other functions would be handled by janitorial and maintenance staff. Additional support would come from the procurement office for purchase of goods and services, and you might use preservation specialists, conservators, or other contract services to meet specialized needs.

Figure 2 (p. A15). illustrates the more elaborate structure that might be required in case of a major disaster in a large and complex organization such as a military academy library or in a natural disaster that affected many units of a base. This organization is predicated on two assumptions. First, in a large-scale disaster, the base commander will have significant responsibilities dealing with other agency heads, government officials, the media, and so on, and will not have time to deal with operational issues related to the recovery. Second, damage will be widespread and many functions aside from the collection will warrant attention. For example, there is likely to be significant damage to the building and its systems, personnel may be affected, and so on. In a disaster of this scope, an additional administrative layer may be required, so that an Operations Manager reports to the Chief Administrator (commander, library director, etc.) and in turn supervises four units: collections, information technology, finance, and safety. It is likely that a senior administrator would assume the Operations Manager position, enabling the Recovery Coordinator to focus on recovery of collections and resumption of collection-related services.

Disaster Team Responsibilities

This section provides a description of the various responsibilities that may need to be discharged. Those in the Collections Unit are likely to be members of your department or organization. The others-in Administration, Information Technology, Finance, and Safety-may be within other units, or you may have to contract for some of those services if the functions are needed in your recovery operation. These job

descriptions should be revised for use in your disaster plan.

A few responsibilities are common to almost every managerial or supervisory position, and are not repeated in the individual job descriptions. They are:

1. Gathers information and develops initial strategy based on personnel available and the nature of the emergency.
2. Establishes a base of operations and announces its location.
3. Arranges for chronological documentation of significant events.
4. Communicates staffing needs to Personnel Manager.
5. Coordinates the use of arriving staff through the Personnel Manager.
6. Manages work crews.
7. Shifts personnel as necessary to ensure efficient work flow and alleviate bottlenecks and other problems.
8. Coordinates equipment and supply needs with Procurement Officer.
9. Continually re-evaluates the emergency and priorities.
10. Regularly reports to supervisor on progress and problems.
11. Thoroughly briefs his/her replacement.

Administration

Chief Administrator - ultimately responsible for protection of life, facilities, and collections. In a large-scale disaster, these duties may fall to the base commander, who will be occupied primarily with other senior administrators and thus need to delegate operational decision-making authority to the Operations Manager. In less significant disasters, the library/archives director fills this position and may also assume some responsibilities detailed under the Operations Manager's position.

Duties

1. Keeps administrators, military commanders, and/or government authorities informed of status and needs.
2. Marshals assistance from other Navy installations and outside agencies.
3. Authorizes emergency expenditures.
4. Establishes priorities for life, safety, physical security, and collections needs.
5. Issues public statements about the disaster or delegates this function to the Public Affairs Officer.

Operations Manager- manages and directs the whole recovery operation, ensuring effective workflow and coordination among organizational units involved in the recovery operations, all with the goal of protecting life, facilities, and collections. Supervises and coordinates the Financial Manager, Chief Safety Officer, Information Technology Manager, and Recovery Coordinator. Reports to the Chief Administrator and is delegated major decision-making authority. In small-to-medium scale disaster, the Chief Administrator and Recovery Coordinator may divide the responsibilities outlined here for the Operations Manager.

The Operations Manager must be a member of the staff, preferably with significant administrative authority, and s/he should have in-depth familiarity with the collections and physical plant (building and systems). S/he should not be a member of any work crew or involved in salvage operations except in routine emergencies, but should be stationed in a quiet office away from the work areas. See Appendix O, Emergency Operations Center, for suitable on-site and off-site locations.

Duties

1. Assesses emergency and declares disaster plan in effect.
2. Takes immediate action to reduce or eliminate the risk.
3. Appoints unit heads (based on pre-established Disaster Team list) as needed to carry out the recovery operations.
4. Authorizes purchases of materials and services.
5. Assesses need for off-site operations center, storage areas, and other spaces, and (if they are required) charges appropriate staff to secure and equip them.
6. In cooperation with the Facilities Manager, analyzes and equips the operations center (if needed), providing for light construction/renovation, establishing power, bringing in equipment and supplies.
7. Ensures protection of personnel and assets.
8. Develops "business resumption plans" - mechanisms for providing access as soon as possible through means such as setting up off-site service points, reopening a portion of the building or office, expediting orders for replacements and duplicates, etc.
9. Ensures long-term clean-up and restoration/rehabilitation operations are initiated.
10. Declares that the emergency is over.

Public Affairs - oversees all external communications during the emergency. *It is extremely important that all communications go through this person to the public or press. No other member of the disaster team should comment on the disaster or the salvage operation.* Gathers, compiles, and coordinates information for dissemination to the media. Serves as liaison to families of employees and volunteers, and manages all outside telephone communications. Generally not needed in a small-scale emergency; otherwise reports to Operations Manager.

Duties

1. Coordinates all media management activities with administrative and collections units.
2. Receives all external communications and requests for information.
3. Disseminates information to the media, including emergency updates, changes in daily procedures, hours of operation, etc.
4. Directs representatives of public safety and community agencies to Safety Officer.
5. Establishes a bulletin board to be used for messages from relatives of staff members and announces its location.

Reporter - maintains written and visual record of all decisions and activities including extent of damage, recommended procedures, treatment priorities, communications with outside agencies and organizations, necessary supplies and services, dispersal arrangements, and other decisions that may be necessary to document insurance claims or for post-disaster evaluation and analysis. Generally not needed in a small-scale emergency; otherwise reports to Operations Manager.

In many organizations, this function will be discharged by an administrative assistant or secretary. In a large-scale disaster it will require full-time effort. In lesser cases, it may be combined with some of the functions of the Recorder within the Collections unit.

Duties

1. Documents significant events, decisions, communications, and so on, and sees that records are maintained for immediate and long-term uses.
2. Compiles information provided by various units to prepare a daily situation report for the Chief Administrator and Operations Manager.
3. Transcribes dictated reports submitted on microcassette.

Photographer - creates visual documentation of the damage and recovery efforts. Reports to Reporter.

Duties

1. As part of preparedness, creates and regularly updates photographic documentation of the normal condition of the building, storage areas, and collections.
2. Documents the disaster on film (using Polaroid or a digital camera for immediate applications and 35mm camera for long-term uses) and videotape if possible.
3. In conjunction with photographic documentation, provides accurate written records to document dates, times, people, and places in order to have a complete documentary record of the disaster.
4. Processes or arranges for processing of film for use by Chief Administrator, Public Affairs Officer, and others for publicity, documentation of claims, etc.

Collections Unit

Recovery Coordinator - directs all recovery operations involving collections materials. Responsible for general supervision of packing and transportation of collections, drying and other salvage activities, storage arrangements, documentation of movement and treatment, and long-term restoration of collection materials. Reports to Chief Administrator in a small-to-medium scale emergency, to Operations Manager in a major disaster.

Duties

1. As part of preparedness, develops and regularly updates disaster preparedness plans for protection and recovery of collections.
2. Retrieves disaster supply kit(s) from storage.

3. Identifies and ensures the protection or salvage of vital records and high-priority collections.
4. Takes immediate action to reduce or eliminate risk of damage to collection.
5. Estimates extent and type of damage to the collection as a whole and to major subunits.
6. Prepares initial damage assessment and establishes priorities for salvage.
7. Notifies Chief Administrator or Operations Manager of support needs.
8. Refines salvage priorities based on type and extent of damage, and establishes priority lists for further salvage efforts.
9. Appoints unit heads as needed (including Salvage Coordinator and Collection Managers) to supervise any part of the recovery operation.
10. Activates, supervises, and (when needed) trains salvage work crews.
11. Determines the sequence and methods of salvage of collections.
12. Establishes work areas for all parts of the recovery operation, with assistance from the Procurement Officer, Facilities Manager, and others necessary for the provision of space, supplies, and equipment.
13. Establishes safe storage locations on-site and off-site, as appropriate.
14. Arranges for continuous monitoring of temperature and relative humidity in areas where collections are stored and in areas where recovery operations (particularly drying) take place.
15. Authorizes discard of collection materials.
16. Oversees the Recorder's documentation of the locations of items.
17. Initiates plans for long-term clean-up and restoration of collections.
18. Issues daily situation report to Chief Administrator or Operations Manager.

Salvage Coordinator - coordinates all salvage activities to minimize damage to the collections. Reports to Recovery Coordinator.

Duties

1. Reports initial damage assessment to the Recovery Coordinator and Collection Manager, and gives initial directions.
2. Takes immediate action to reduce or eliminate risk of damage to collection.
3. Obtains emergency supplies as necessary and advises Recovery Coordinator of additional supply and equipment needs.
4. Coordinates with Photographer to document the disaster.
5. Advises Recovery Coordinator on the sequence and methods of salvage of collections.
6. Activates, supervises, and (as needed) trains salvage work crews.
7. Oversees the Recorder's documentation of the locations of items.
8. Gives specific direction to safety agencies and staff assigned to the salvage effort on handling of collection materials.
9. Recommends on-site and off-site storage areas to Recovery Coordinator.
10. Arranges with Recovery Coordinator for specific conservation documentation.

Collection Manager-- provides guidance on salvage priorities, disposition decisions, and replacement options for collection materials.

Should be the staff member who can best appraise the value/importance of materials and availability of replacements for those within their purview. In a library, the function may be discharged by bibliographers, collection development or acquisitions staff, reference librarians, circulation managers, or curators of special collections. In a records management office or archives, this responsibility often falls to records managers, archivists, and/or the units that created the records. Depending on the extent of the emergency, a separate Collections Manager may be appointed for subsets of the collection by format (e.g., archives, manuscripts, photographs, microforms, electronic records, etc.), department (e.g., reference, periodicals, local history, etc.), or physical location (e.g., room, floor, building, etc.). Reports to Recovery Coordinator.

Duties:

1. As part of preparedness, establishes salvage priorities.
2. Refines established salvage priorities based on type and extent of damage.
3. Selects salvage techniques and restoration strategies in consultation with Salvage Coordinator and Preservation Specialist.
4. Recommends discard of collection materials.
5. Develops "business resumption plans"- mechanisms for providing access as soon as possible through means such as setting up off-site service points, re-opening a portion of the building or office, expediting orders for replacements and duplicates, etc.

Preservation Specialist - provides expert guidance on salvage, preservation, and restoration activities to minimize damage to the collections. Ideally, this should be a staff member, and in organizations with a conservator or preservation administrator on staff, the duties of Salvage Coordinator and Preservation Specialist may be combined in that person. Reports to the Recovery Coordinator.

Duties

1. Recommends appropriate salvage techniques and rehabilitation strategies.
2. Provides training on various aspects of salvage, preservation, and collection restoration operations.
3. Performs stabilization, repair, and conservation treatments within his/her area of expertise.
4. Contacts and evaluates outside service providers (binders, conservators, etc.) for provision of treatment services.

Recorder - maintains collection records to track status and disposition of all materials through recovery operation. Generally requires familiarity with inventory control or database management software. In libraries or archives, may call for efficiency with national (e.g., OCLC or RLIN) or local (e.g., Horizon) bibliographic systems.

Duties

1. Creates and maintains tracking/ inventory system to monitor status of materials from packing through various salvage operations to storage and eventual return.

2. Develops inventory form and system for packout crews' use in numbering/coding containers and pallets.
3. Works with Information Technology Manager for salvage, restoration, or reconstruction of computer systems and files.
4. Updates local registers, databases, finding aids, catalogs to reflect discards, conservation treatments, etc.
5. Documents decisions and forwards daily reports to Reporter.

Information Technology Unit

Information Technology Manager - responsible for the protection and recovery of the organization's servers and PC-based data processing functions, and other computer technology. Reports to the Recovery Coordinator in organizations that use data files and electronic records as an integral part of the collection (e.g., many records management offices). Otherwise, reports to the Operations Manager in major disasters and to the Chief Administrator in lesser emergencies.

Duties

1. As part of preparedness, oversees routine weekly/daily system backups, provides for off-site storage of backup copies, and identifies potential off-site facilities that could be used in the event of a disaster.
2. Supervises or contracts for salvage/restoration of computer equipment, software, and files.
3. Plans and manages the relocation of computer equipment, data files, etc. to off-site facilities.

Financial Unit

Financial Manager - manages key financial operations including personnel, procurement, and insurance communications. Generally the accountant, comptroller, or chief financial officer of the organization. Reports to the Chief Administrator.

Duties

1. Works with Chief Administrator to expedite emergency expenditures.
2. Ensures accurate tracking of costs and documentation of losses.
3. Initiates contacts and ongoing communications with risk manager to negotiate claim.
4. Notifies insurance representatives of situation and manages ongoing communications and negotiations.

Personnel Manager - responsible for the efficient deployment of all personnel used in the salvage effort. Reports to Financial Manager. In large-scale disaster, may appoint staff to serve as Training Coordinator, Volunteer Coordinator, etc., and delegate appropriate duties to them.

Duties

1. Maintains emergency notification files and coordinates with the Recovery Coordinator or Operations Manager for contact of off-duty personnel.

2. As part of preparedness, identifies sources of temporary workers and volunteers.
3. Identifies whether any personnel are missing and informs Safety Officer.
4. Maintains accurate records of time spent by staff and volunteers in recovery operations.
5. Assembles personnel and assigns them to units based on their skills. Issues authorized permit badges that indicate authorization to be on the premises.
6. Under the direction of the Recovery Coordinator or Operations Manager, establishes and continually revises the manpower priorities of the various units.
7. Arranges, if necessary, for the employment of any temporary trade labor and/or security in the clean-up and disaster recovery effort.
8. Maintains a roster of all current deployment of on-site personnel.
9. Instructs personnel to return to the personnel pool for reassignment upon completion of their task and release of unit supervisor.
10. Coordinates the use of arriving staff, temporary workers, and volunteers with unit managers to ensure that all needs are met on a priority basis.
11. Schedules work crews in consultation with unit managers.
12. In consultation with unit heads, identifies training needs.
13. Provides or arranges training for staff and volunteers through demonstrations, instructions, and on-the-job training throughout the recovery operation.
14. Schedules breaks and refreshments.
15. Coordinates recruitment of outside medical personnel with Health and Safety Officer.
16. Issues call for volunteers through preestablished channels.
17. Establishes and staffs volunteer check-in point(s), and ensures proper registration of volunteers.
18. Surveys available volunteers for special skills and, after careful screening, assigns them to an appropriate unit.
19. Ensures appropriate acknowledgement of volunteers during recovery and as part of wrap-up work.

Procurement Officer - manages efficient procurement, receipt, and distribution of supplies and equipment; handles transportation using organizational or leased vehicles and transportation services. Is generally a member of the accounting or purchasing department. Reports to the Financial Manager.

Duties

1. As part of preparedness, formulates agreements with emergency services such as freezer facilities, dehumidification and drying services, trucking firms, cleaning services, and other vendors.
2. As part of disaster preparedness, may assist Recovery Coordinator in inventorying in-house disaster supply kits as well as supplies and equipment housed in central supply depots, warehouses, and other buildings.
3. Locates and assembles emergency supplies and equipment, and arranges

for delivery to the building or off-site operations center(s).
4. Monitors supply inventory during recovery operation.
5. Coordinates and arranges for any additional equipment and supplies needed for the clean-up and disaster recovery teams.
6. Distributes supplies and equipment to work crews.
7. Locates vendors of goods and services and, in consultation with appropriate units, assesses their qualifications and arranges agreements with them.
8. Locates appropriate space for drying, storage, or other recovery operations; if necessary, locates appropriate space for temporary relocation of the whole library, archives, and/or records management office.
9. Protects agency/organizational vehicles when a disaster warning is issued; ensures that vehicles have fuel and that fuel stockpiles are safeguarded.
10. Coordinates and arranges for transportation needs during recovery operation, including transportation of personnel, equipment, supplies, and collection materials to an off-site storage center.

Safety Unit

Chief Safety Officer - responsible for the safety and welfare of all persons on the premises, maintenance and repair of building and systems, and security of the site. Generally the head of maintenance and security. Reports to the Operations Manager in large-scale operation; otherwise, reports to Chief Administrator and coordinates with Recovery Coordinator.

Duties

1. Formulates and distributes plan for orderly evacuation of the building.
2. Maintains building emergency personnel at necessary staffing level.
3. Schedules at least two evacuation drills per year.
4. Schedules periodic meetings in order to maintain a functional organization and/or issues memos to inform staff of developments and policies affecting evacuation activities.
5. Informs local fire and police departments of repository's disaster plans, and provides them with a copy of the written disaster plan.
6. Arranges continuing education for staff in areas related to fire safety, evacuation, etc.
7. Supervises the evacuation process.
8. Ascertains the safety of the building before allowing staff to re-enter.
9. Coordinates activities with local emergency officials (police and fire departments), Civil Defense, etc.
10. Sets up and maintains alternate communication system when normal phone service is unavailable.
11. Distributes communications devices to staff, maintains an inventory to ensure all are returned, and provides necessary repairs or replacement.

Facilities Manager - responsible for the maintenance and repair of the physical plant including the building and systems

(electrical, utilities, plumbing, HVAC, etc.). Sets priorities for, plans, and supervises clean-up and repair of physical plant, including building and systems. Generally the facilities manager or head of buildings and grounds. Reports to Chief Safety Officer.

Duties

1. Appoints and manages units or work crews for clean-up (e.g., janitorial staff), building construction, HVAC and other building systems, and others as needed.
2. Manages shut-off and restoration of utilities (electrical, water, gas, etc.), heating and air-conditioning systems, and others when necessary.
3. Serves as liaison with local utility companies.
4. Manages site clean-up and debris removal.
5. Plans and manages short-term building stabilization/repair and long-term repair and rehabilitation.
6. In cooperation with Operations Manager and/or Recovery Coordinator, analyzes and equips off-site operations center(s), providing for light construction or renovation, establishing power, bringing in equipment and supplies.
7. Provides temperature and humidity controls and air circulation as needed to optimize drying conditions and inhibit mold growth.
8. Identifies and evaluates contract services and works with Procurement Officer to establish agreements.
9. Coordinates and supervises contract services for building- and systems-related work.

Security Head- arranges and supervises site security and security within the building. Generally the head of security. Reports to Chief Safety Officer.

Duties

1. Arranges for security of the outside perimeter of the building to ensure that no unauthorized persons are on the premises and to prevent trespassing, theft, vandalism, etc.
2. Secures collection areas room-by-room or as appropriate.
3. Monitors personnel within the building to ensure that they are wearing authorized badges and are registered with the Personnel Manager.

Health and Safety Officer - responsible for general safety and welfare of all staff and volunteers during the emergency. Reports to Chief Safety Officer.

Duties

1. Assembles and directs a team of workers, primarily using security employees and others trained in first aid.
2. Arranges for outside support for identification and removal of hazardous substances.
3. Maintain supplies in all first aid kits.
4. Establishes first aid station in case of emergency, and appoints assistants to administer care.
5. Supervises evacuation of sick and injured.

6. Reports hospitalization needs of the injured to Chief Safety Officer.
7. Directs all life safety, evacuation, fire, and building safety operations.
8. Conducts search and rescue operations.
9. Investigates all accidents, injuries, or deaths related to the emergency and maintains accurate chronological records, including confidential lists of injuries and fatalities. Reports this information to the Personnel Manager.
10. Coordinates with Public Affairs Officer to facilitate outside communications with or concerning staff or volunteers.
11. Coordinates with the Red Cross.
12. Ensures collection or purchase of drinking water when disaster warning is issued in advance of flooding, hurricane, etc.
13. Establishes and manages food and shelter stations, including rest room facilities.
14. Arranges food and beverages for refreshment breaks using caterer or food service, stockpiled food, etc.

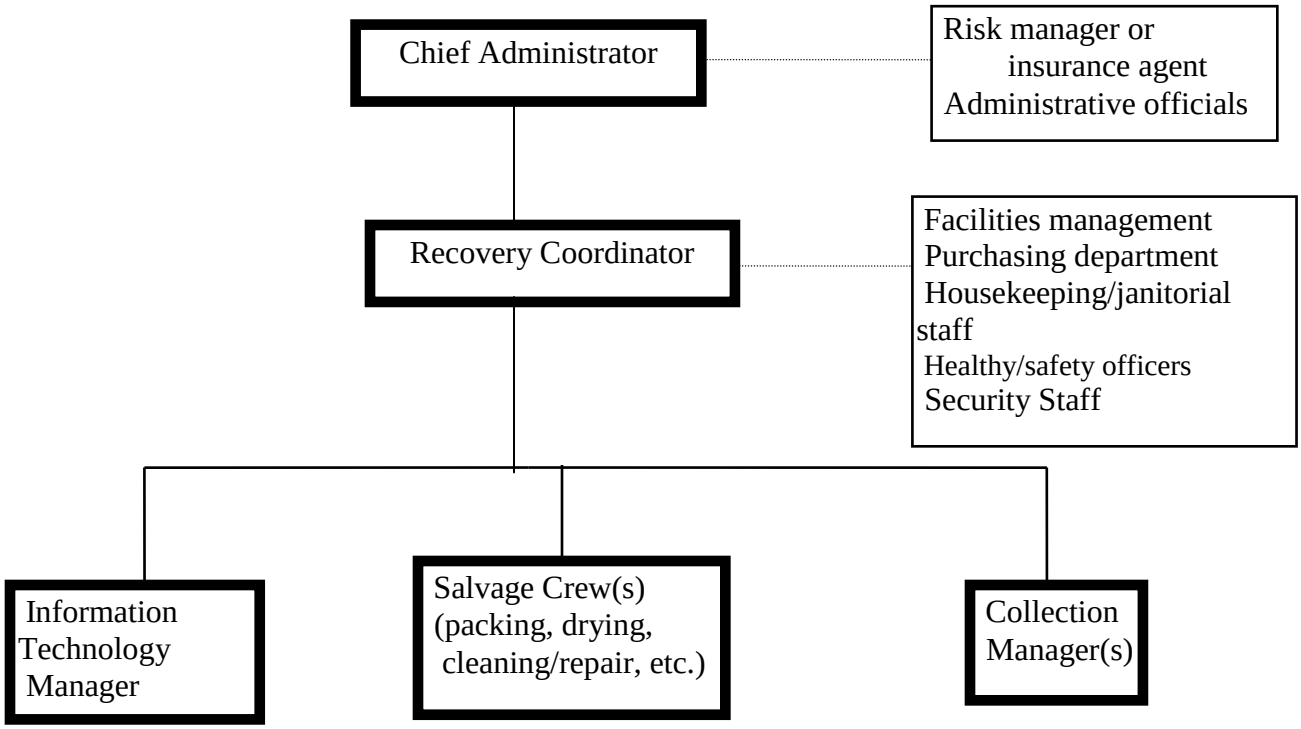

Figure 1. Organization for a Small-to-Medium Scale Disaster Recovery Operation

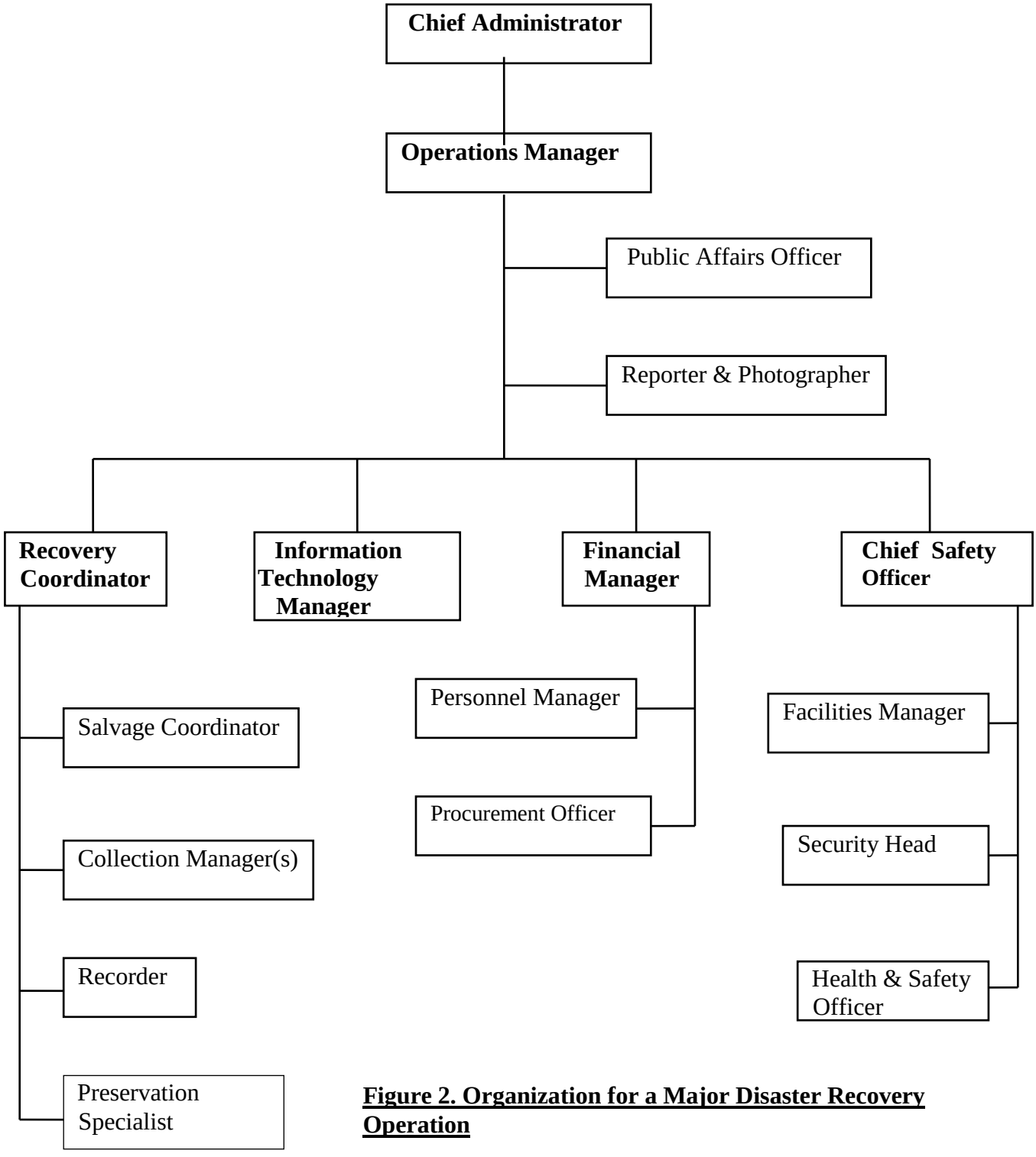

Figure 2. Organization for a Major Disaster Recovery Operation

Appendix A1: Disaster Team

Show the names, disaster responsibilities, phone numbers (office, home, cell phone, beeper), and home address of each team member. Include backups for each position. In a large repository, or one that is subject to major natural disasters (earthquake, floods, hurricane, tornado, wildfire, etc.), you should have three to five people identified for each position--a primary assignment and two to four alternates.

To the extent possible, develop plans so that staff members' disaster responsibilities are closely related to their regular jobs. For example, the Procurement Officer would be a member of the purchasing department, and the Personnel Manager on the disaster team would be the organization's personnel officer.

This list provides a quick reference of names and phone numbers for each member of the disaster team. If telephones are not working, use alternate methods outlined in the Communication Plan (Appendix F). Home addresses are included in the full staff list in Appendix A3.

Function	Name	Work Phone	Home Phone	Cell/Beeper
Chief Administrator				
Assistant Director				
Operations Manager				
Alternate				
Alternate				
Recovery Coordinator				
Alternate				
Alternate				
Chief Safety Officer				
Alternate				
Alternate				
IT Manager				
Alternate				

Alternate _____

Financial Manager _____

Alternate _____

Alternate _____

Collections Managers *[Specify area or collection over which each has responsibility.]*

_____ _____

Alternate _____

Alternate _____

_____ _____

Alternate _____

Alternate _____

_____ _____

Alternate _____

Alternate _____

_____ _____

Alternate _____

Alternate _____

_____ _____

Alternate _____

Alternate _____

Unit Heads

Facilities Manager _____

Alternate _____

Alternate _____

Health and Safety Officer _____

Alternate _____

Alternate _____

Personnel Manager _____

Alternate _____

Alternate _____

Photographer _____

Alternate _____

Alternate _____

Preservation Specialist _____

Alternate _____

Alternate _____

Procurement Officer _____

Alternate _____

Alternate _____

Public Affairs Officer _____

Alternate _____

Alternate _____

Recorder _____

Alternate _____

Alternate _____

Reporter _____

Alternate _____

Alternate _____

Salvage Coordinator _____

Alternate _____

Alternate _____

Security Head _____

Alternate _____

Alternate _____

Work Crews _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Team Member Responsibilities

[Use the template information in "Background Information on Appendix A1: Disaster Team" as the basis for writing your own descriptions of disaster team members' jobs. Insert each position and its job description in this section.]

Appendix A2: Supplemental Personnel

If a disaster occurs that exceeds staff resources, supplemental personnel may be needed. This appendix lists possible sources of assistance.

The _____ *[specify position(s) such as Operations Manager, Recovery Coordinator, Personnel Manager, or other]* will determine whether volunteers or temporary staff members are needed, how many are required, and qualifications or skills required for the tasks. These individuals will determine if compensation is warranted.

Assistance from Nearby Cultural Institutions

[In the event of a disaster, staff members from other nearby cultural institutions (who have experience dealing with library and archival collections) may be willing to help out by providing on-site assistance from librarians or conservators.]

1. The _____ *[specify Personnel Manager or other responsible position]* will initiate contacts with nearby cultural institutions.

2. The following institutions have indicated a willingness to assist with recovery operations as necessary: *[For each organization, use the following template.]*

   Organization: _____

   Contact Person: _____

   Contact Information (e.g., address; work, home, and cell phones): _____

   _____

   Back-up Contact: _____

   Backup Contact Information (e.g., address; work, home, and cell phones):

   _____

   _____

   Notes: _____

   _____

   _____

Volunteers

[Many Navy installations may not be allowed to use volunteers. Check with the local Judge Advocate General's office to determine whether you can use volunteers or what restrictions may apply. On a base, family and friends are the most likely volunteers. Others in the community may also wish to assist.]

1. The _____ *[specify Personnel Manager or other responsible position]* will initiate contacts with service organizations, civic groups, and other volunteer resources.

2. The following have been identified as possible sources that might provide volunteers to assist with recovery operations: *[In establishing contacts, consider organizations such as veterans groups, Elks, Kiwanis Club, Knights of Columbus, Rotary Club, Boy/Girl Scouts, ROTC units, labor organizations, etc. For each organization, use the following template.]*

   Organization: _____

   Contact Person: _____

   Contact Information (e.g., address; work, home, and cell phones): _____

   _____

   Back-up Contact: _____

   Backup Contact Information (e.g., address; work, home, and cell phones):

   _____

   _____

   Notes: _____

   _____

   _____

3. If volunteers arrive on the scene without being solicited and the disaster team is not prepared to use their services:

   - Decline their assistance, at least for now.
   - Take their names and phone numbers.
   - Advise them that they will be contacted if/when assistance is needed.

4. If volunteers arrive on the scene following a solicitation, _____ *[specify responsible position such as Volunteer Coordinator]* will register them.

   - Take the person's name and phone number.
   - Interview them to determine their suitability for recovery tasks: experience and knowledge, physical abilities and limitations, hours of availability, etc.
   - Have each person complete a medical/emergency information form. *[Place a copy of the form in Appendix L, Forms.]*
   - *[Depending on the advice of your insurance carrier or legal adviser, you may also wish to have volunteers sign a waiver of liability.]*

5. _____ *[Specify position such as Personnel Manager or Volunteer Coordinator]* will establish and maintain a system for keeping track of time worked by each volunteer.

6. _____ *[Specify position such as Personnel Manager, Volunteer Coordinator, or Training Instructor]* will provide necessary training to volunteers before they begin work.

7. Supervision and Work Conditions. Volunteers will receive direct and continuous supervision.
   - Volunteers will be assigned to a staff member who will be responsible for his/her team of volunteers, oversee their work in the recovery operation, and ensure their safety and welfare (including the provision of protective gear, refreshments and meals, and rest periods).
   - No staff member will be assigned more than 6 volunteers.
   - Volunteers, like other workers, should be given regular breaks, rest periods, and (if appropriate) meals.

8. Acknowledgment.
   - During the recovery operation, senior staff members will circulate among the volunteers, recognize their assistance, and express appreciation.
   - Once the recovery operation is over, the _____ *[specify a position such as the Chief Administrator or Director]* will send letters of appreciation to volunteers.

Temporary Services

1. The _____ *[name position such as the Personnel Manager]* will initiate contacts with temporary agencies if auxiliary workers are needed.

2. The following sources may be contacted regarding temporary workers: *[In establishing contacts, consider organizations like Kelly Professional Services, Manpower, etc. If your organization has existing agreements, list them here and (if applicable) indicate purchase order numbers or other authorizations in the "Notes" section of each entry. The organization may also have an employment pool that can provide assistance with manual or low-skilled work. Replicate this template for the organizations you identify.]*

   Organization: _____

   Contact Person: _____

   Contact Information (e.g., address work, home, and cell phones): _____

   _____

   Back-up Contact: _____

   Backup Contact Information (e.g., address; work, home, and cell phones):

   _____

   _____

   Notes: _____

   _____

   _____

Support Services for Staff, Volunteers, and Workers

[The experiences of September and October 2001 have brought new awareness of the need to provide for the emotional needs of staff members, volunteers, and temporary workers during and after a disaster. Even a relatively small event can be emotionally upsetting, and in a widespread disaster some people may be dealing with the disaster at home as well.

The Office of Personnel Management (OPM) advises agencies on the management of specific traumatic situations, and also helps with the development of plans, policies, and other mechanisms to deal with traumatic events. See the OPM publication Handling Traumatic Events: A Manager's Handbook (available online at http://www.opm.gov/Employment_and_Benefits/WorkLife/OfficialDocuments/handbooksguides/Trauma/index.asp) for more detailed information on how to proceed when faced with a disaster or other traumatic event. Also remember that every Federal agency has an Employee Assistance Program (EAP), which would be able to provide counseling during and after a disaster.]

1. The _____ *[name position such as the Personnel Manager]* will facilitate employee/volunteer contact with the appropriate agencies or organizations if counseling or other support services are needed.

2. The following agencies or organizations have been identified as resources for counseling and/or other support during and after a disaster *[For each organization, use the following template]*:

   Organization: _____

   Contact Person: _____

   Contact Information (e.g., address, work, home, and cell phones): _____

   _____

   Back-up Contact: _____

   Notes: _____

   _____

   _____

Appendix A3: Staff List

Insert here a full list of your staff. For each person, provide:

- *Name*
- *Position*
- *Work phone number*
- *Work email address*
- *Home address*
- *Home email address*
- *Home telephone, cell phone, beeper/pager numbers*
- *Disaster team responsibility*

At a minimum, arrange the entire list alphabetically. In large organizations, it may be useful also to create a staff list organized by department or other unit.

It may also be useful for you to highlight the names of staff members who live on the base or nearby, since they would be available for quick response to a disaster.

Appendix B: Supplies and Services

Background Information for Appendix B1: Disaster Supply Stockpile

Ordinary disasters plague most libraries and archives on a regular basis. The roof leaks. An air-conditioning system component malfunctions, sending water onto materials below. Pipes leak and drains back up. A few books or records get wet due to users' carelessness. Most routine emergencies are water-related, but mold outbreaks also are a constant threat in many collections.

Quick response can make the difference between a minor annoyance and a costly event. The faster the problem is corrected and materials are stabilized, the less damaged they will be. Having a disaster stockpile on hand can be a great help, so that staff members can begin immediately responding rather than spending valuable time gathering supplies from various locations in the organization or in local stores.

The "Disaster Supply Stockpile" appendix (Appendix B1) provides a template you can use to develop your supply stockpile and conduct periodic inventories. Most of the items are readily available from local hardware, grocery, and drug stores. A few more specialized ones may be purchased from suppliers listed in Appendix B2, Suppliers and Service Providers.

Scope and Purpose of the Supplies

As you begin to develop your disaster stockpile, one question is critical: For what disaster are you preparing? If you wish only to have supplies to deal with small-scale emergencies, you may need only to keep the basic supplies on hand, knowing that you can rely on local suppliers for supplementary ones. Institutions prone to major area-wide disasters (such as earthquakes, floods, and hurricanes) must plan for a greater level of self-sufficiency, because area suppliers may be affected and materials you need (e.g., plastic sheeting and plywood) may be subject to shortages and price-gouging. In those cases, it is generally a good idea for you to have a stockpile that will provide three to five days worth of recovery supplies.[7] Between these two extremes is the risk of a large but localized disaster such as a fire. Fast action within the first three days is crucial to a successful recovery, and you should have a three-day supply of any specialized supplies that you cannot easily obtain locally.

Storing the Stockpile

You must decide where and how to store the supplies. Think about the vulnerabilities in your building. Avoid the areas that are most susceptible to leaks or flooding; this generally argues against storage in the

[7] Michael Trinkley's *Hurricane! Surviving the Big One: A Primer for Libraries, Museums, and Archives* (cited in the Bibliography, Appendix T) provides detailed guidance on the types and quantities of supplies needed in such cases. While written for hurricane preparedness, the information is applicable to many other types of area-wide natural disasters.

basement or under the roof. Interior closets are often good candidates. Some institutions divide the stockpile, storing two or more identical kits in different areas of the building as a hedge against disaster. You might also place the kit on a wooden pallet to provide protection against minor flooding in the storage area.

Store the supplies in sealed, waterproof containers so that even if there is some water in the area, the kit will be intact. Several experts recommend storing supplies in 20- to 30-gallon plastic garbage cans; they can be transported easily to the site and have additional uses for debris removal and so on. A similar choice is a polyethylene drum, available from major plastic container suppliers. Some institutions put the supplies in milk crates, each shrink-wrapped in plastic and secured onto a dolly or hand truck. You might also use ProText's Rescubes® or React·pak.[8] Others use military-style foot lockers.

At least one institution uses a series of "crash carts"-modified custodial carts that contain the supplies and equipment needed for immediate response to a particular kind of emergency. The carts designed for response to water leaks contain squeegees, plastic sheeting, buckets and mops, sponges and paper towels, a wet/dry vacuum, portable generator, work lights, electrical cords, small tools, and personal protective equipment.

[8] Contact ProText at P.O Box 30423, Bethesda, Maryland 20824; phone 301/320-7231.

If you have a large stockpile, you may want to pack the containers by category, putting food and water in one kit, tools in another, mold treatment supplies in one, drying supplies in another, and so on. One organization uses duffle bags for this purpose, packing the relevant sections of the disaster plan and supplies needed for immediate response in the appropriate bag. Each bag is labeled by disaster job title, and all are stored in a secure but accessible location.

Be sure to keep a copy of your stockpile checklist in each in-house kit, showing the location of supplies and equipment kept elsewhere (e.g., mops, fans, dehumidifiers) and with instructions on how to get access to their storage locations. Also, be sure all members of the disaster team, or others who may have to respond to an emergency, are aware of the locations of the kits and know how to get into them.

Off-site Storage

You may decide not to include some bulky or expensive items in your stockpile, but to rely on other units of your organization for them. For example, you might rely upon the maintenance department for tools and construction materials, the housekeeping department for cleaning supplies, and so on. If you do so, be aware that those units might not be available at night, and that they might not willingly share their supplies with you in the event of a large-scale disaster. It is generally good to keep the most critical supplies in your own disaster kit.

If you decide to create a large stockpile to handle major disasters, you may store some of the more cumbersome equipment (generators, dehumidifiers, and so on) outside your building. In addition, you might keep a limited quantity of supplies in your building and back-up supplies elsewhere. Some public institutions use a city or county warehouse for this purpose. However, be sure you know how to get access to these facilities, and be sure to inventory the off-site supplies regularly.

Inventory

Inventory the supplies on a regular basis to determine that all materials are present and in good condition. This should be done at least quarterly, but monthly is preferable if the kits are not secure. If you seal the supply kits, you will be able to tell at a glance whether anyone has used them. You might secure the containers with nylon cord and seal the ends by melting the ends of the nylon cord. ProText provides self-locking tamper-evident nylon ties for use with Rescubes. Other organizations use shrink-wrap to provide quick indication that the kit has been opened.

Even assuming the contents are intact, though, some materials need to be replaced periodically. For example, batteries, film, and duct tape have a limited shelf life, so you need to establish a schedule for inspecting and replacing them.

Appendix B1: Disaster Supply Stockpile

To ensure fast and effective response to collection-threatening emergencies, the repository maintains a stockpile of disaster recovery supplies. This appendix lists those supplies and their storage locations.

[Include the following paragraph if some of your supplies are kept outside the building -- for example, in a central warehouse or supply depot.]

The location designation _____ *[insert abbreviation or code you plan to use]* refers to the facility located at _____ *[insert exact street address, floor, etc.]*. To get access to this facility, contact _____ *[name individual(s) who authorize and provide keys or access to the location, including office and after-hours phone numbers]*. If s/he is unavailable, contact in the following order:

Name/Title	Office Phone	Home Phone/Beeper

If you maintain supplies in multiple buildings, you may wish to subdivide the supply list below by storage location.

You may wish to add other prefatory information to this list. For example, note that when the kits need to be replenished, companies in the Suppliers and Service Providers appendix (B2) can be contacted. You may also note here (as in the Prevention/Protection Plan) the frequency of inventories and who is responsible for conducting them.

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

In the list below, supplies have been distinguished by typeface:

- *Boldface type indicates the basic items that are essential in the event of a relatively small emergency (3 file drawers or 50 volumes) that includes bound materials, paper documents, and photographic materials (including microfilm).*
- *Italic type indicates items that are generally needed only in a large-scale emergency where site repairs are required, outside services are not readily available, and the organization must have a relatively high level of self-sufficiency.*
- *Normal type indicates items in the middle range--probably useful but not essential in a small-to-medium sized disaster recovery, but essential in a large-scale disaster.*

*Amounts in the "Quantity Needed" column represent the **minimum** needed to salvage materials in a routine water emergency (e.g., about 3 file drawers or 50 volumes of damaged materials) when utilities are not disrupted. As part of your planning, determine the scale and types of disasters for which you need to prepare, and increase the quantities accordingly. Depending on the type of situations you anticipate, some of these supplies may not be needed.*

"Background Information for Appendix B2: Suppliers and Service Providers" explains how these supplies are used. It also provides some recommendations about appropriate composition, types, and sizes.

Operational Supplies

Section 1. Operational Supplies				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
book trucks and hand carts or dollies		2		
camera with flash (Polaroid, disposable 35mm, or VCR) **& film and/or digital camera with flash and multiple memory cards, and**		100 exposures		

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Section 1. Operational Supplies				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
numerous batteries				
clipboards, plastic		1		
extension cords, 50-foot, grounded, heavy gauge		2		
flashlights, batteries, and replacement bulbs (headband type, to provide free hands)		1 per dept.		
garbage bags (4 mil)		1 box		
generator, portable				
ground fault circuit interrupters				
labels, adhesive				
light sticks, chemical				
lights, shop, & bulbs				
markers, waterproof		4		
note pads		1		
paper towels or Handiwipes		1 carton		
pens & pencils		4		
plastic sheeting		6 rolls		
scissors		2 pair		
shovel				

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Section 1. Operational Supplies				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
tape, duct		2 rolls		
tape, filament				
tape, hazard				
tape, masking		2 rolls		
tape dispenser, heavy-duty		1		
utility knives, extra blades				
walkie-talkies, cell phones, etc. and batteries				

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Supplies for People

Section 2. Supplies for People				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
aprons, plastic disposable				
blankets				
boots, rubber				
boots, safety-toe				
cots, folding				
first aid kits (include ice packs, compresses)		1		
food, snacks, and non-perishable meals				
gloves, latex or rubber		3 per person		
goggles, liquid-tight				
goggles, safety				
hard hats		1/person		
hard hat, electrically protective				
identification badges				
masks[9]				
plastic plates, cups, and utensils				

[9] The use of common dust masks is not allowed per OPNAVINST 5100.23G (12/30/2005).

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Section 2. Supplies for People				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
protective clothing (e.g., rubber aprons, Tyvek coveralls)				
respirators[10]				
toilet, portable				
water, drinking		1 gal. per person per day		
Toilet paper				
Kleenex				
Insect repellent				
Hand cleaner				
Particle masks				

[10] The Navy requires all personnel who will use a respirator to be fit-tested and trained.

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Salvage Supplies

Section 3. Salvage Supplies				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
alcohol				
blotter paper, white		50 sheets		
book press		1		
boxes, cardboard[11]				
boxes, polyethylene (e.g., ResCubes)[12]		10		
bread trays, plastic				
buckets (for rinsing)				
clothesline (nylon or 30-lb. monofilament)		100 feet		
clothespins, plastic		100		
dehumidifiers		1		
fans		1		
film cleaning solutions				
freezer bags, 1-gal. (4 mil)		50		
freezer paper or waxed paper				
garbage cans, plastic, 5-gal.				

[11] May use polyethylene boxes or plastic milk crates instead.

[12] May use cardboard boxes or milk crates instead.

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Section 3. Salvage Supplies				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
garbage cans, plastic, 30- to 50-gal.				
garden hoses and spray nozzles				
interleaving paper (paper towels or uninked newsprint)				
milk crates[13]		10		
moisture meter				
Mylar sheets, 3-mil, 12" × 15"				
photo trays or shallow dish pans (for rinsing)				
plywood				
tables, 6-ft., folding				
temperature/humidity monitors and batteries[14]				
weights				
siphon				

[13] May use boxes (cardboard or polyethylene) instead.

[14] May be devices such as hygrometers, hygrothermometers, hygrothermographs, or psychrometers. Dataloggers often will not be useful since they rely on access to PCs.

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Site Clean-Up and Rehabilitation

Section 4. Site Clean-Up and Rehabilitation				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
bleach				
brooms				
brooms with squeegees				
cleaning products				
crowbar				
disinfectant				
drill				
fungicide				
ground fault circuit interrupter(s)				
hacksaw				
hammers				
hand saw				
ladders				
lumber, 2"x4" and other				
mops				
mop buckets				
nails, misc. sizes				
pliers, various types				
plywood, assorted sizes				
safety goggles				

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Section 4. Site Clean-Up and Rehabilitation				
Item	**Location**	**Quantity Needed**	**Quantity Present**	**Date Checked**
saw horses				
screwdrivers, manual & cordless, with Phillips and standard tips				
sponges, cleaning				
sponges, natural latex (for smoke/soot removal)				
sprinkler(s), lawn				
staple gun and assorted sizes of staples				
tape measure				
tape, electrical				
wet/dry vacuums (equipped with appropriate filters)				
wrenches, various types				
work gloves, heavy-duty				

Bold type indicates basic supplies; *italic type=supplies for large-scale or area-wide disaster*; normal type=supplies for mid-range disaster response.

Background Information for Appendix B2: Suppliers and Service Providers

A key part of disaster preparedness is the identification of emergency contacts, service providers, suppliers, and other resources you may need to use in disaster recovery. It is best to make these contacts before you are required to deal with a disaster, when you can calmly evaluate the suitability of a particular service or product and establish an understanding with key personnel.

Several published lists identify companies that provide services, supplies, and equipment that are likely to be useful to cultural institutions in a disaster. Some can be identified through the Yellow Pages of the telephone book. As you contact each firm, address the following points:

- Availability: Explain what kinds of resources you might need and find out what services, equipment, and/or supplies are available and at what price. Will it be possible for you to contact the provider and gain access to the resource outside normal business hours? How much delay should you anticipate in delivery of materials or provision of services?
- Payment Terms: In the event of a disaster, your normal procurement procedures may not be in operation. Will the provider accept a standing purchase order, extend credit, or make some other arrangement so that you can quickly have access to the resources after-hours (at night, on holidays or weekends) or in an emergency situation?
- Contacts: Let the supplier know which of your personnel are authorized to call for help. In addition, get the names of a primary contact and a back-up (in case your primary contact is unavailable) at the company. If possible, get phone numbers you can use to contact staff outside normal business hours.

It is generally prudent to have multiple providers of each service, supply, or equipment type. In a large-scale disaster, even if area vendors are available, your needs may exceed a single company's available stock. That was the case when one large urban library suffered a fire and the staff discovered there were not enough cardboard boxes in the whole city to meet their needs.

The need for multiple providers is even greater for institutions that are prone to area-wide natural disasters such as earthquakes, floods, and hurricanes. To prepare for those, be sure to have some suppliers outside your geographic area. Your local suppliers may be able to recommend affiliates or colleagues outside the immediate area.

Geographic proximity may be irrelevant when identifying qualified recovery and restoration services, particularly for the more technical services such as vacuum freeze-drying, on-site dehumidification, or video restoration. A few national companies have developed an understanding of the needs of library and archival materials and have developed sophisticated services to address those needs. Many have mobile equipment and teams that can be on-site within a matter of a few hours, and others have developed ways to facilitate shipment of damaged materials.

It is important that the providers understand and support your needs, so the contacts should be renewed at least annually, but semi-annually is preferable. This provides an opportunity for you to learn of new resources that may have become available and to update the contact information for your institution and the supplier.

A few major disaster recovery firms allow organizations to have a profile on hand. That is, you provide information on your building, power sources, mechanical systems, authorization procedures, and so on. Then, if you call to request assistance, the firm already has basic information and can more quickly initiate an appropriate response.

Supplies

This section lists the types of supplies that might be needed in a disaster, and provides some information about the types needed and (in some cases) the types of suppliers from which they can be acquired. The information is supplemented by the section below, "National Suppliers and Service Providers."

Alcohol: Used to remove mold from covers of books, but does not kill mold. Denatured and isopropyl alcohol are least toxic and most readily available. Be aware that alcohol will dissolve some dyes and may affect pyroxylin-coated book cloth (library buckram). It should not be used on rare, special, or artifactually valuable materials. Large quantities can be purchased from chemical or janitorial suppliers.

Art supply stores: Source of blotter paper and some other specialized supplies.

Beepers: May be used to contact staff when regular phone service is disrupted, especially in area-wide disasters.

Bleach: May be used in 10% solution with water to serve as a disinfectant. Never use on collection materials, and be sure to ventilate the area.

Book press: Used for pressing dry or nearly-dry bound volumes and papers to reduce cockling and distortion of pages. Available from conservation suppliers and some art supply stores.

Boots, rubber: Worn by workers in wet areas.

Boots, steel-toed, steel-shanked, etc.: Worn by workers in unstable or hazardous construction areas, especially when there is broken glass or when lifting or moving objects heavy enough to cause injury to toes or feet if dropped. An alternative is to purchase over-the-shoe type foot guards (one size fits all) and issue them as needed.

Boxes -- see "Containers"

Bread trays: Used for stacking manuscripts, maps, oversized documents, works of art on paper, and other loose documents for transport and air-drying. Can sometimes be borrowed from bakeries.

Buckets -- see "Housewares"

Building materials and tools: Wide variety of materials may be necessary for stabilizing or repairing shelves, windows, and building structures. Most are available from hardware stores.

Camera -- see "Photographic supplies"

Chemical light sticks -- see "Light sticks, chemical"

Chemical sponges -- see "Sponges, chemical"

Cleaning products and supplies -- see "Housewares"

Clothesline -- see "Hardware" and "Housewares." Used for air-drying pamphlets, photographs, other light-weight materials. Thirty-pound monofilament (fishing line) works well; it can be hung in 6-foot lengths ½-inch to 1 inch apart. Be aware it may be too sharp for some wet paper.

Clothespins -- see "Housewares." Use only plastic ones, as wooden clothespins may stain paper.

Clothing, protective -- see "Safety supplies" and "Hardware." Provided to ensure worker safety during salvage operations. May include dust masks, work gloves, rubber/latex gloves, hard hats, rubber aprons, rubber boots, "Tyvek" coveralls.

Containers, cardboard: Used for packing collection materials. Cardboard boxes should be 200-lb. test and stocked primarily in two sizes: 1 cubic foot (12" x 15" x 10") and 1.5 cubic foot (12" x 18" x 12"). In addition, keep some large, shallow boxes for packing maps and other oversized paper documents. Can be purchased from moving companies, but prices are generally lower from box suppliers (check the Yellow Pages).

Containers, plastic (e.g., Rescubes): Used for packing collection materials.

Containers, milk crates: Used for packing collection materials. Collapsible milk crates are generally preferable, since they require less storage space than fixed crates.

Dehumidifiers, industrial: Used for reducing humidity in buildings, particularly when normal air-conditioning is unavailable. Check Yellow Pages for "Dehumidifying Equipment."

Dehumidifiers, portable -- see "Housewares." Used to reduce humidity in small, enclosed spaces to facilitate drying.

Dish pans -- see "Housewares." Used for rinsing photographic materials, computer diskettes, and other small items.

Disinfectant -- see "Drug stores" and "Housewares." Used to clean shelves and other surfaces, especially following water damage. Proprietary cleaners such as Lysol are available. A more economical option is bleach used in a 10% solution with water.

Drug stores: Source of several general-purpose supplies, alcohol, first aid materials, safety supplies, etc. Companies like CVS, Rite Aid and Walgreens.

Dry ice: May be used to keep materials cool during transport or while awaiting transport. Available from chemical suppliers. Handle carefully, and never with bare hands, as it can cause injury to unprotected skin.

Dumpsters: May be necessary if large quantities of building materials or other debris must be removed from building.

Electronics stores: Source of cellular phones, pagers/beepers, radios, walkie-talkies. Companies like Circuit City and Radio Shack.

Extension cords -- see "Hardware"

Fans, industrial: Used to increase air circulation, particularly in spaces where collections are being dried, as air movement increases evaporation and reduces the risk of mold.

Film cleaning solutions -- see "Photographic supplies." May be used when salvaging modern prints and negatives. However, it is generally best to have photographic materials treated by a conservator.

First aid supplies -- see "Drug stores" and "Safety supplies"

Flashlights -- see "Hardware"

Fork lift: May be needed to move materials stacked on pallets. A manually operated, hydraulic "pallet jack" may be used instead.

Freezer bags -- see "Housewares"

Fungicide: Used to treat mold-infested materials and spaces.

Garbage bags -- see "Housewares." "Ziploc"-type bags have several uses. Moldy materials can be enclosed in them to prevent spores from spreading. Small quantities of film materials may be stored in them with clean water while awaiting salvage.

Garbage cans, plastic -- see "Housewares." Used for cleaning or rinsing dirty materials, for storing and transporting materials and supplies, and hauling debris. Small, 5-gallon cans can be filled with clean, cold water to keep various film and magnetic media wet until they can be processed professionally. It is helpful if these have tight-fitting lids.

Generator, portable -- see "Hardware." May be used to provide temporary, low-level electricity.

Generator, heavy-duty: Provides power adequate to operate air-conditioning systems and provide increased electricity.

Gloves, rubber or latex -- see "Drug stores" and "Housewares"

Gloves, work -- see "Hardware." Used for protection during construction and heavy lifting.

Goggles, safety -- see "Hardware" or "Safety supplies." Some liquid-tight goggles should be available when working in wet areas or when working with chemicals.

Ground fault circuit interrupter -- see "Hardware." Must be used with any hand-held tools or equipment to protect personnel from electrocution when working outdoors, below ground level (e.g., in a basement), or in wet or damp conditions. See OSHA 29 CFR 1910.

Hand trucks, dollies: Used for transporting materials within the site.

Hard hat -- see "Hardware" and "Safety supplies." Useful in areas where structural damage has occurred or where overhead work is being done.

Hard hat, electrically protective -- see "Hardware" and "Safety supplies." Useful when working in areas where there may be loose or hanging electrical wires.

Hardware: Source of building materials, generators, tools, garden hoses, etc. Companies like Ace Hardware, Builders Square, Hechingers, and Home Depot.

Hoses, garden, and nozzles -- see "Hardware" and "Housewares." Used for cleaning dirt/mud from material, and may have applications in site clean-up. A hose is good for most purposes.

Housewares: Source of general-purpose supplies such as cleaning products and supplies, clothesline and clothespins, freezer paper and waxed paper, garbage bags and cans, garden hoses, paper towels, rubber gloves. Companies like KMart and WalMart, as well as some grocery stores.

Humidity/temperature monitors (e.g., hygrometer, hygrothermometer, hygrothermograph, psychrometer): Monitors temperature and humidity levels, to ensure that they are sufficiently low. Hygrothermographs provide a constant recording of temperature and relative humidity over time. Psychrometers, hygrometers, and hygrothermometers are less expensive, but only tell the temperature and humidity at the time a person takes a reading.

Labels, adhesive -- see "Office supplies." May be used for labelling boxes and other general purposes.

Ladders -- see "Hardware." May be necessary for various operations and construction/repair. Be sure you have one ladder that will reach the roof.

Light sticks, chemical: Plastic tubes containing nonflammable and non-toxic chemicals that provide temporary, low-level light when the tubes are bent or shaken. Will emit light for 30 minutes to 12 hours, depending on the type. Long-lasting, low-intensity light sticks are useful for marking pathways and identifying obstacles in dark recovery sites. They have a shelf life of about four years. Often available in camping supply stores like REI.

Lighting, portable: Provides lighting for work crews when normal power and lights are unavailable. Shop lights (see "Hardware") may be suitable.

Lumber -- see "Hardware." May be used for temporary or long-term repairs. 2" x 4" boards combined with plywood are good for most purposes.

Masks, dust -- see "Hardware" and "Safety supplies"

Milk crates: Used for packing collection materials for freezing or transport to drying service. May be purchased (see "Housewares" and "Office supplies") or sometimes borrowed from dairy providers or grocery stores.

Moisture meter: Measures the humidity inside an object. Different types are available, including some that are electronic psychrometers with a special sensing probe. Flat or "sword" probes may be inserted between pages of a volume or papers in a file, then the device provides a read-out of the humidity. The devices are helpful in monitoring progress during drying, especially air-drying.

Monofilament -- see "Clothesline"

Mylar: Individual sheets may be used to separate wet paper documents. Available from conservation suppliers and some art supply stores. Interleaving sheets should also be highly considered.

Nails and screws -- see "Hardware." May be used for temporary or long-term repairs. Purchase a variety of types and sizes.

Newsprint, uninked: Used for interleaving wet materials to increase evaporation. Roll ends may also be available from local newspapers for a minimal charge.

Office supplies: Various materials (clip boards, note pads, markers, labels, scissors, utility knives, etc.) that may be needed for recovery operations. Companies like Office Depot, OfficeMax, and Staples.

Pagers -- see "Electronics stores." Used for communication, particularly when telephone service is disrupted.

Pallets, wooden: Packed boxes may be stacked on pallets to facilitate transport.

Paper, blotter -- see "Art supplies." Used in drying loose paper materials. White blotter paper is preferred.

Paper, freezer or waxed -- see "Housewares." Used to separate individual volumes prior to freezing.

Paper towels -- see "Housewares." Used for general cleaning and other purposes (HandiWipes also work). May also be used to interleave bound volumes during air-drying.

Phones, cellular -- see "Electronics stores." Used for communication, particularly when telephone service is disrupted.

Photo processing trays -- see "Photographic supplies." Used for rinsing photographic materials, computer diskettes, and other small items; shallow dish pans serve the same purpose.

Photographic supplies and processing: Source of film and processing services that may be needed to document damage and recovery activities

Plastic (polyethylene) sheeting -- see "Hardware." Used for a variety of purposes: to protect shelves, cabinets, furniture, and equipment from continuing threat of water; as temporary window covering; etc. 6-mil polyethylene is stronger, but 4-mil (the minimum acceptable weight) is less expensive. Should generally be purchased in 100-foot rolls. Use clear plastic, not black, so you can see through it.

Plywood -- see "Hardware." May be used for boarding up windows and temporary or long-term repairs. Plastic-covered plywood may be used to transport oversized prints, drawings, maps, etc.

Polyester, spun bonded (e.g., Hollytex, Pellon, and Reemay): Used for interleaving materials printed on coated paper (e.g., yearbooks, many art books) to prevent pages from sticking together. Also used to transport single sheets of paper. Available from local sewing and fabric stores, as well as conservation suppliers.

Radio -- see "Electronics." Portable radio with AM and weather band reception is useful for monitoring weather conditions.

Recorder, voice-activated microcassette -- see "Electronics store." May be used to supplement photographic and written documentation of a disaster.

Respirators -- see "Safety Supplies." Used when mold or other biological contaminants are present. The Navy requires all personnel who will use a respirator to be fit-tested and trained. OPNAVINST 5100.23G does not allow the use of common dust masks.

Rope -- see "Hardware" and "Housewares." May be used for several purposes, including marking off-limits areas of the building. About 500 feet of ¼" nylon rope is appropriate.

Safety supplies: Source of personal safety supplies such as protective clothing, first aid kits, hard hats, etc. Local ones may be identified in the telephone book Yellow Pages under headings like "Laboratory Equipment & Supplies" and "Safety Equipment & Clothing."

Saw horses -- see "Hardware." May be needed in construction, and can be used with plywood boards to serve as temporary tables.

Shovel -- see "Hardware." Used for clean-up and debris removal.

Siphon- For removing water from certain areas.

Sponges, natural latex -- Used for removing dirt and soot from collection materials, especially for edges of bound volumes. Use 100% pure latex sponges, which contain no chemicals or residues.

Sprinklers, lawn -- see "Hardware." Used for soaking roof and vegetation when wildfire threatens.

Squeegee broom -- see "Hardware." May be used for removing water from floors.

Staple gun -- see "Hardware." Also keep extra staples of various sizes.

Sump pump: Used to remove standing water.

Tables, folding: May be needed for temporary work space or for air-drying operations. Size of 6' x 30" is recommended. May be borrowed from armories, churches, civic organizations, schools, etc. Temporary tables can be set up using board and saw horses.

Tape -- see "Office supplies." May need duct tape (particularly if surfaces are wet), filament tape, tape dispensers, etc. for sealing boxes, affixing plastic sheeting over cabinets and shelves, and various other uses.

Tools -- see "Hardware." Various tools may be needed for site clean-up and construction or repair work, including crowbar, drill, hacksaw, hammers, hand saw, pliers, screwdrivers (manual and cordless), wrenches, etc.

Utility knives -- see "Hardware" and "Office supplies." General uses such as cutting tape.

Walkie-talkies -- see "Electronics stores." Used for communication, particularly when telephone service is disrupted.

Weights: Used to flatten materials in final stages of air-drying. Sheets of glass or metal, plexiglass plywood, and bricks wrapped in paper or bookcloth are all suitable. Wrapped bricks can also be used to prop up bound volumes during air-drying.

Wet-dry vacuum: Used to remove small quantities of standing water.

Services

This section lists the types of services that might be needed in a disaster. The information is supplemented by the section below, "National Suppliers and Service Providers."

Architect: May assist with building rehabilitation.

Carpenter: May assist with building rehabilitation.

Chemist: Provides expert advice in case of biological contamination, and may advise in case of mold outbreak.

Computer operations hot- or cold site: May be needed in the event that critical information technology functions cannot be carried out in the affected building.

Conservator: Provides advice on stabilization and salvage; performs conservation treatments on affected items. Conservators typically provide advice and treatment on only a specific format of materials, and the following specialties may be needed, depending on the institution's holdings:

- art works, paintings

- books and paper
- ceramics
- electronic media
- furniture
- maritime vessels
- metals
- photographic materials
- sculpture, indoor and outdoor
- textiles

If the building itself is an historic artifact, one or more historic preservation specialists should be on the list of resources.

Contractor, building: May assist with building rehabilitation.

Contractor, heating/air-conditioning system: May assist with building rehabilitation.

Data recovery service: Performs restoration of data on magnetic or optical media.

Dehumidification service: Several national companies and some local ones provide portable dehumidification equipment that can dry out buildings, furnishings, and collections on-site.

Electrician: May assist with building rehabilitation.

Engineer, structural: May assist with building rehabilitation.

Exterminator: Treats insect- or rodent-affected sites.

Fire alarm system: Maintains detectors, alarms, systems.

Fire restoration: Companies that provide smoke odor removal for buildings and furnishings. A few also deodorize and clean affected materials in the collection. Some will trim soot-damaged books and arrange for rebinding.

Fire sprinkler system service company: Provides maintenance and tests, and may be needed in case of an accidental discharge.

Food and portable water storage providers

Freeze-drying service: May provide vacuum (thermal) drying or vacuum freeze-drying of collections. It is important to know which method each vendor uses. Several national companies provide this service, using portable equipment and mobile salvage teams.

Freezer space: May be used for temporary storage of collections while awaiting further decisions and action. Freezing will ward off the risk of mold and prevent further swelling and distortion of paper-based materials.

For best results, use a commercial blast freezer, one that freezes materials at -10°F or lower. Commercial freezers are listed in the *International Directory of Refrigerated Warehouses & Distribution Centers and Blue Pages* (Bethesda, MD: International Association of Refrigerated Warehouses), available from the association at 7315 Wisconsin Ave., Suite 1200 North, Bethesda, MD 20814, 301-652-5674, for $150). Also check the Yellow Pages under "Warehouses--Cold Storage."

If there is a cafeteria or restaurant on the premises, it may have a walk-in freezer you could use for small-to-medium quantities.

As you contact companies, be aware that health regulations may restrict the storage of library and archival materials with certain foodstuffs.

The Wei T'o™ freezer is an in-house blast freezer that can freeze and dry materials within a month. It has the capacity to freeze and dry a few hundred books at a time. The freezer must be specially ordered 3-4 months in advance and is quite expensive, so it is not an option for most situations. It may be useful as part of the preparedness program in repositories that experience frequent, small-scale water emergencies.

In a pinch, you can use a home freezer. Self-defrosting freezers work best, and the temperature should be below 15°F.

Fumigation service: Treats mold-infested materials, furnishings, etc.

Glazier: Assists with repair or replacement of windows.

Health department: Assists with clean-up in case of a toxic, biological, chemical, or other contaminant-related disaster, and may provide other useful information.

Heating/ventilation/air-conditioning engineer: May assist with building rehabilitation.

Historic preservation specialist: May provide advice regarding repairs and rehabilitation for historic buildings.

Information technology specialist: Provides consultation on information technology functions, including restoration of equipment, recovery of software and data files.

Insurance Commissioner, State: May be consulted if problems develop with the insurance company.

Janitorial service: May assist with building clean-up.

Lawyer: May be needed in case of disputes with various contractors or other parties, and advises on liability issues related to use of staff and volunteers in salvage effort.

Locksmith: May assist with building rehabilitation or provide entry in case keys are unavailable.

Magnetic media restoration: Recovers and duplicates magnetic media including computer tapes, audio cassettes, videotapes, etc.

Microform restoration: Cleans and duplicates microform materials.

Moving/relocation service: May be needed if operations must be moved to another location.

Mycologist: Assists in identifying source of mold outbreak and may assist in recommending treatments and evaluating fumigation services.

Plumber: May assist with building rehabilitation.

Preservation specialist: Provides wide variety of information and consultation on all elements of disaster operations.

Roofer: May assist with building rehabilitation.

Security/guard service: May be needed if supplemental security is needed, particularly in cases where doors, windows, and security systems are damaged.

Smoke/soot removal -- see "Fire restoration"

Space, drying: Off-site area in which drying operations can be carried out.

Space, office/storage: Off-site space in which routine office functions can be carried out or in which unaffected materials can be housed if the building is unsuitable.

Tent rental: May provide off-site space in which drying or other operations can be carried out if the building is significantly damaged.

Trailer (mobile home) rental: May provide off-site space in which drying or other operations can be carried out if the building is significantly damaged.

Trucking service: Provides transportation of materials to off-site storage space, freezer facilities, restoration services, etc.

Trucking service, refrigerated: Provides transportation of materials to off-site storage space, freezer facilities, restoration services, etc. Used when mold is a risk and warrants refrigeration, or when previously frozen materials are transported.

Videotape restoration: Cleans, stabilizes, and duplicates damaged videotape materials.

National Suppliers and Service Providers

The following list includes companies that provide specialized services and information that may be useful in carrying out disaster recovery activities. Each entry includes the company's name, mailing address, and phone number. Where available, e-mail addresses and Web sites are also provided. To the right is a brief indication of the services or products available through each company.

Inclusion in this list does not imply endorsement, nor does the omission of any supplier indicate censure. Since most of the firms included on this list have been involved in disaster recovery operations in libraries, archives, and/or records offices, they are likely to be sensitive to the special requirements of these collections.

Traditional library and archival suppliers carry many basic disaster recovery supplies such as Mylar, blotting paper, and so on. Request catalogs from companies such as Gaylord (800-448-6160), Light Impressions (800-828-6216 or 716-271-8960), and University Products, Inc. (800-628-1912 or 413-532-4277).

Many other local resources can be identified through the Yellow Pages. Look under headings such as: *dehumidifying equipment*, which also includes firms that provide dehumidification services on-site and/or at their plants; *fire and water damage restoration*; *janitor service* for assistance with basic clean-up; *pest control services*, which will include fumigation as well as extermination; *smoke odor counteracting service* for firms that specialize in cleaning and deodorizing; and *water damage restoration*. Local companies are likely to be less aware of current research and preferences associated with disaster recovery in libraries, archives, and records offices, so the buyer must carefully evaluate them.

Before including any organization in the disaster plan, be sure to contact the company to verify that the information is correct, identify a contact person, and gather cost estimates and ascertain other specific terms.

Abbeon Cal, Inc. *scientific and monitoring equipment* 123 Gray Ave. Santa Barbara, CA 93101 (805) 966-0810 or (800)-922-0977 http://www.abbeon.com	Aggreko *industrial-capacity portable generators* National Support Center 15600 John F. Kennedy Blvd. Suite 200 Houston, TX 77032 Phone (Toll Free in US) 877-603-6021, (outside US) 1-281-985-8200 Fax 1-281-985-8201 *Aggreko has 57 branches located in the United States and Canada*
Aldrich Chemical Co. *masks* 1001 West Saint Paul Avenue Milwaukee, WI 53201 (800) 558-9260	All Weather, Inc. *Weather Equip.* 1165 National Drive Sacramento, C.A. 95834 (916)-928-1000 Fax (916)-928-1165
American Freeze-Dry, Inc. *freeze-drying, trucks, fumigation, deodorization, cleaning* 411 White Horse Pike Audubon, NJ 08106 (609) 546-0777 http://www.americanfreezedry.com	American Institute for Conservation *referral to conservators* 1717 K St., N.W. Suite 200 Washington, DC 20006 (202) 452-9545 http://aic.stanford.edu
Blackmon-Mooring-Steamatic Catastrophe, Inc. (BMS-CAT) *comprehensive recovery services* 303 Arthur St. Fort Worth, TX 76107 (800) 940-2267 24-hour hotline: (800) 433-2940 Fax: (817) 332-2770 *BMS CAT also has regional offices in Atlanta (770-409-9669), Chicago (708-396-0217), and Springfield, Va. (703-866-2037).* http://www.bmscat.com	Craig Jensen BookLab II *bookbinding, preservation photocopying* 1724 McCarty Lane San Marcos, TX 78666 (512) 392-2363 http://www.booklab.bookways.com
Chicora Foundation *fire safety training, pest control assistance* P. O. Box 8664 Columbia, SC 29202 (803) 787-6910 http://chicora.org	Cole-Parmer Instrument Co. *chemical light sticks, scientific & monitoring equipment* 625 East Bunker Court Vernon Hills, IL 60061 Phone: (800) 323-4340 Fax: 1-847-247-2929 http://www.coleparmer.com

Conservation Center for Art & Historic Artifacts 264 S. 23rd St. *information, referrals,* Philadelphia, PA 19103 *conservation treatment* (215) 545-0613 ccaha@ccaha.org http://www.ccaha.org	Conservation Materials, Ltd. *scientific &* 1395 Greg Street, Suite 110 *monitoring* *equipment,* P.O. Box 2884 *conservation supplies* Sparks, NV 89432 (702) 331-0582 or (800)-733-5283
Datasonic *water-sensing alarm* Units 1&2, Wakeford Farm, Pamber End Tadley, RG26 5QN, United Kingdom http://www.datasonic.co.uk	Paul Davis Systems *cleaning & deodorizing* 38 Crockford Blvd Toronto Ontario M1R 3C2 Phone 1-800-661-5975 or (416)-299-8890 Fax (416)-299-8510 http://pds.ca
Direct Safety Company *water sensors* P.O. Box 44995 Madison, WI 53744 (800) 528-7405 Fax: (800) 760-2975 http://www.directsafety.com	Disaster Recovery Services, Inc. 414 Blue Smoke Court West *comprehensive* Fort Worth, TX 76105 *recovery services* (800) 856-3333 Fax: (817) 536-1167
Document Reprocessors *comprehensive* 1384 Rollins Rd. *recovery services* Burlingame, CA 94010 (800) 4-DRYING (800)-437-9464 or (650)-401-7711 http://www.documentreprocessors.com Document Reprocessors (East Coast office) 5611 Water St. Middlesex, NY 14507 (585)-554-4114	Dorlen Products *water-sensing alarm* 6615 West Layton Ave. Milwaukee, WI 53220 (414)-282-4840 or Toll Free (800)-798-8840 Fax: (414) 282-5670 http://www.wateralert.com
Eastman Kodak Co. *reprocessing of* Disaster Recovery Laboratory *Kodak film* 1700 Dewey Avenue B-65, Door G, Room 340 Rochester, NY 14650 24-hour hotline: (800) EKC-TEST (800-352-8378) http;//www.kodak.com	Enviro-Air Control Corp. *refrigerated* 1523 N. Post Oak Rd. *dehumidification* Houston, TX 77055 *equipment* (713)-681-3969 or (713) 681-3449
Film Technology *restoration of* 726 North Cole Avenue *16- and 35mm* Los Angeles, CA 90030 *movie film* (323)-464-3456 http://www.filmtech.com	Fisher Scientific Co. *scientific and* 2000 Park Lane Dr Ste 2 *monitoring equipment* Pittsburgh, PA 15275-1126 Phone (412)-490-8300 Fax (412)-490-831 www.fishersci.com

Fuji Photo Film, USA, Inc. *reprocessing* 2000 Summit Lake Dr. *of Fuji film* Valhalla, NY 10595-1356 http://www.fujifilm.com *Contact nearest Fuji office, and ask for technical specialist in Document Products office to arrange for salvage*	Garrison/Lull Consultants *architectural and* P.O. Box 337 *environmental consulting* Princeton Junction, NJ 08550 (609) 259-8050
Getty Conservation Institute *information on* 1200 Getty Center Dr. *salvaging art works* Los Angeles, CA 90049 (310)-440-7300 http://www.getty.edu/conservation	Graham Magnetics, Inc. *salvage of computer* 1715 4th Street *media* Graham, TX 76450 (940)-549-4500 http://www.grahammagnetics.com/aboutUs.html
International Association of Refrigerated Warehouses *annual directory* 1500 King Street *of freezer* Suite 201 *warehouses* Alexandria, VA 22314 (703)-373-4300 http://www.iarw.org/index.asp	Lab Safety Supply *protective clothing,* P.O. Box 1368 *safety supplies,* Janesville, WI 53547 *water sensors* (800) 356-0783 http://www.labsafety.com
Landmark Facilities Group *architectural and* 252 East Ave. *environmental consulting* Norwalk, CT 06855 (203) 866-4626 www.museumsusa.org/vendors/info/1259491	Library Binding Institute *referral to certified* 4300 South U.S. Highway One *library binders* Jupiter, FL 33477 (561)-745-6821 www.lbibinders.org
Library of Congress *information* 101 Independence Ave, SE Washington, D.C. 20540 General Phone (202)-707-5000 http://www.loc.gov/index.html	Light Impressions *conservation supplies* P.O. Box 787 *(especially photographic),* Brea, CA 92822 *monitoring equipment* (800) 828-6216 orders and customer service
Loss Control Services Chubb Group of Insurance Companies 15 Mountain View Rd Warren, NJ 07059 Phone (908)-903-2000 Fax (908)-903-2027 http://www.chubb.com	M. F. Bank Restoration Co. *comprehensive* 6659 Peachtree Industrial Blvd. *recovery services* Suite AA Norcross, GA 30092 (800) 843-7284 outside Georgia (770) 448-7250 in Georgia *M. F. Bank has other regional offices; contact the Georgia office or check your phone directory*

Midwest Freeze-Dry, Ltd. *vacuum drying,* North Central Park *fumigation* Skokie, IL 60076 (847) 679-4756 http://www.midwestfreezedry.com	Munters Moisture Control Services *vacuum* 2008 Bloomingdale Rd. *drying, on-site* Glendale Heights, IL 60139-2192 *dehumidification* (800)-686-8377 http://www.munters.com *Munters has regional offices throughout the country.*
National Archives & Records Administration Conservation Lab *information* 8601 Adelphi Rd., College Park, MD 20740-6001 1-866-272-6272 http://www.archives.gov	National Center for Film & Video Preservation American Film Institute *information* 2021 North Western Ave. Los Angeles, CA 90027 (323)-856-7708 http://www.afi.com/about/preservation/ncfvp.aspx
National Fire Protection Assn. *information* Batterymarch Park *on fire safety standards* Quincy, MA 02169 *and practices* 1-617-770-3000 http://www.nfpa.org	National Institute for the Conservation of Cultural Property *information* 1730 K St., N.W., Suite 403 Washington, DC 20007 (202) 634-1435 http://www.heritagepreservation.org
National Media Laboratory *information* Imitation Corp *on recorded* 1 Imitation Place *sound and video* Oakdale, MN 55128 (612) 736-8147 http://www.imitation.com/government/nml	National Trust for Historic Preservation 1785 Massachusetts Ave., N.W. *information* Washington, DC 20036 (202)-588-6000 or (800)-944-6847 http://www.nationaltrust.org
Northeast Document Conservation Center 100 Brickstone Square *information,* Andover, MA 01810 *referrals,* (978) 470-1010 *conservation treatment* Fax: (978) 475-6021 http://www.nedcc.org	Panametrics, Inc. *scientific &* 221 Crescent St. *monitoring equipment* Waltham, MA 02453 (781)-899-2719 http://www.americanmachinist.com
Pest Control Services, Inc. *consultation* Dr. Thomas Parker, President *on pest control* 469 Mimosa Cicrle *and fumigation* Kenneth Square, PA 19348 (610)-444-2277 bugman22@aol.com http://termitesonly.com	ProText *"Rescubes"* P.O. Box 30423 *and "ReactPaks"* Bethesda, MD 20815 (301) 718-7231 www.protext.net

Randomex, Inc. *salvage of computer media* Data Recovery Division 1100 East Willow St. Signal Hill, CA 90806 (213)-595-8323	Raychem Corporation *water-sensing cable* 300 Constitution Drive Menlo Park, CA 94025-1164 1-650-361-3333 http://raychem.tycoelectronics.com
Restoration Technologies, Inc. *recovery of electronic equipment* 3695 Prairie Lake Court Aurora, IL 60504 Toll Free (800)-421-9290 Phone (630)-851-1551 http://www.restorationtech.com	Retawmatic Corp. *water detectors* 14911 41st Street Flushing NY, 11355 (718)-886-0502
Scientific Sales, Inc. *scientific and monitoring equipment* P.O. Box 6725 Lawrenceville, NJ 08648 (800) 788-5666, (609) 844-0055 Fax: (609) 844-0466 http://www.scientificsales.com	SOLEX Environmental Systems, Inc. *on-site dehumidification and other services* P.O. Box 460242 Houston, TX 77056 (800) 848-0484 or (713) 963-8600
SOLINET *information and referrals* 1438 W. Peachtree St., N.W., Suite 200 Atlanta, GA 30309-2955 (800) 999-8558 national WATS (404) 892-0943 in Georgia http://www.solinet.net	TALAS *conservation supplies* 213 W. 35 St. New York, NY 10001-1996 (212) 219-0770 Fax: (212) 219-0735 http://www.talasonline.com
Thomas Scientific *scientific & monitoring equipment* P.O. Box 99 Swedesboro, NJ 08085 Main number (215) 988-0533, Customer service(800) 345-2100 http://www.thomassci.com/index.jsp	University Products, Inc. *conservation supplies, monitoring equipment* 30-00 47th Ave, 6th Floor Long Island City, N.Y. 11101 Toll Free (800)-653-8434 Voice (718)-482-7111 http://www.vidipax.com/index.php
Unsmoke Systems, Inc. *wide range of recovery services* 4660 Elizabeth Street Corapolis, PA 15108 (800) 332-6037 http://www.vwrsp.com	VidiPax *videotape restoration and consultation* 30-00 47th Ave., 6th Floor Long Island City, NY 11101 Toll Free (800)-653-8434 Voice (718)-482-7111 http://www.vidipax.com/index.php

VWR Scientific *scientific &* 1310 Goshen Parkway *monitoring equipment* West Chester, PA 19380 Orders 1-800-932-5000 Web Orders www.vwr.com Phone (610)-431-1700 Fax (610)-431-9174	Wei T'o Associates, Inc. *freeze-dry machine* 21750 Main St., Unit 27 Matteson, IL 60443 (708) 747-6660 Fax: (708) 747-6639 http://www.weito.com
Zephyr Manufacturing *natural latex sponges* P.O. Box 71 Sedalia, MO 65302-0071 Phone (660)-827-0352 Fax (660)-827-0713 http://www/zephyrmfg.com	Applied Science Associates, INC 70 Dean Knauss Drive Narragansett, RI 02882-1143 Phone 1-401-789-6224 Fax 1-401-789-1932 http://www.appsci.com

Appendix B2: Suppliers and Service Providers

This appendix lists the sources of supplies and services that might be needed in a disaster. Section A describes the uses and sources of supplies. Section B describes specialized services and sources of information and referrals.

Remember to include multiple providers of the supplies (such as boxes and plastic) and services (such as freezer warehouses). If your organization is vulnerable to area-wide natural disasters, also include some sources outside your geographic area. If you keep some of these supplies in your in-house stockpile, note those locations.

In the "Notes" section of each entry, describe the products and services available, payment terms, and any special arrangements, unique features, limitations, or other conditions. You may also describe how and/or when the supply or service is used, drawing information from the "Background Information" section of this appendix.

The institutional resource list should be organized to reflect for each type of supply or service the following basic information:

Item (e.g., Cardboard Boxes, Freezer Space, etc.)

Company: _____

Phone: _____ Fax: _____

Address: _____

Notes: _____

_____

Date of Last Contact: _____

	After-Hours Contacts	*Home Phone*	*Cell Phone/Beeper*
Primary:			
Back-up:			

Supplies

This section should be organized by type of supply. Use the template above to provide an entry for each provider of that supply.

Services

This section should be organized by type of service, and use the template above to provide an entry for each provider of that service. You may wish to subdivide the "Services" section to separate those that provide only or primarily advice and information.

Appendix C: Bomb Threat

Background Information for Appendix C: Bomb Threat

Consult with your security/safety personnel about procedures to be followed in case of a bomb threat, and modify the procedures here to reflect your own situation.

1. Keep the caller on the telephone if possible and gather information on the Bomb Threat Report Form on the following page. If the institution has caller ID, remember to write down the number that appears.

2. Immediately call _____ *[specify Police Department, security office, or other appropriate contact]* at _____ *[provide phone number]*, or have someone else call as soon as possible.

3. Await instructions from the Police Department. Only evacuate the building as they order it. Evacuation should be implemented by the police, not staff, so that the police can check evacuation routes for bombs. Also staff should be instructed NOT to pull the fire alarm, since no audible alert is preferred.

Bomb Threat Report Form

Date: ____/____/____ Time: _____ a.m./p.m.

Person receiving the call: _____

If the institution has caller ID, write down the number that appears:

Exact words of caller:

_____

_____

_____

Ask the caller the following questions:

a. Who placed the bomb? _____

b. What does it look like? __round __square __other _____
__package __briefcase

c. What kind of bomb is it? _____

d. What will cause it to explode? _____

e. What is your name? _____

f. When is it going to explode? _____

g. Exactly where is the bomb? _____

h. Why was it placed? _____

Other information to aid in the investigation and search:

a. Voice characteristics of the caller

__male	__female	__young	__middle aged	__old	__excited
__high pitch	__deep	__soft	__raspy	__loud	__intoxicated
__calm	__angry	__crying	__normal	__familiar	
__laughing	__cracking	__ragged	__disguised	__deep breathing	

b. Speech:

__fast	__stutter	__slow	__nasal	__distinct	__slurred
__foul	__lisp	__irrational	__incoherent	__distorted	
__taped message	__well spoken				

c. Background Noise:

__street (cars, buses, etc.)	__house (dishes, TV, etc.)	__local call
__airplanes	__motor (fan, a/c, etc.)	__long distance
__voices	__animal noises	__phone booth
__PA system	__clear	__factory machinery
__music	__static	

__other: _____

_____

d. Other Information: _____

_____

_____

Appendix D: Building Stabilization, Environmental Control, and Mold Remediation

Background Information for Appendix D: Building Stabilization, Environmental Control, and Mold Remediation

Use Appendix D1 to outline the responsibilities of the facilities staff for stabilizing the building and climate control system in the aftermath of a disaster. You may wish to pay particular attention to the strategies that can be used to provide the appropriate cooling and dehumidification that is necessary to reduce the risk of mold.

Use Appendix D2 to assist in recovering from a moderate to major mold outbreak in the collection. Proper safety precautions are required, and proper cleaning procedures must be followed. These are outlined in this section for your information, but keep in mind that mold cleanup can only be done by someone who has been fit-tested to wear the proper type of respirator. In practice, this means that mold cleanup needs to be done by an outside contractor, NOT by your staff.

Appendix D3 provides a sample Disaster Recovery Contract, which will be needed in the event of a large-scale disaster involving water damage and/or mold.

Appendix D1: Health and Safety Universal Precautions for Post-Flood Buildings

Written by:
Matthew Klein Mark Fleming Indoor Air Quality Solutions Blue Chip Builders, Inc. (See the end of this file for contact information) (Reprinted with the permission of the author).

This sheet contains only information relevant to health and safety hazards of buildings after floods. It doesn't contain detailed instructions about cleaning or claims procedures. This sheet was developed in response to the lack of comprehensive information about health and safety hazards due to floods. The health and safety information in this sheet has been developed from review of information from a broad range of sources and the authors' personal experience in building environment problems.

Table of Contents

Universal Precautions:

This information sheet contains universal precautions. Universal precautions are used with the assumption that a hazard exists, whether it actually does or not, unless proven otherwise. Therefore, protective measures are used until the hazard is proven to not exist. Yes, universal precautions might not be needed. However, they're used because: experience has shown that a hazard most likely exists; the consequences of a hazard far outweigh the trouble and cost of using precautions; lack of time or cost prohibit the analysis needed to rule out a hazard; and/or persons who don't have the knowledge or skills to analyze for a hazard will be working in a potentially hazardous environment. One point needs to be made, post-flood buildings have a high probability of having health or safety hazards. Whenever you are unsure about how hazardous a situation is, always use caution until the situation is proven otherwise.

Health Precautions:

Any tetanus shot that was received more than 5 years ago is assumed to be ineffective protection. Other immunizations might also be needed based on local health department recommendations. If you cannot remember when you last received a particular shot, assume it to be ineffective. Any person injured while working in post-flood buildings needs to be up-to-date on his or her

tetanus shots. All persons might need other shots; pay attention to news bulletins from health organizations.

All persons with the following health problems shouldn't enter post-flood buildings until after they are completely cleaned up, decontaminated, and dried out: persons with severe asthma, mold allergies or chronic respiratory disease; persons who have had other hypersensitivity respiratory reactions to bacteria or mold, such as hypersensitivity pneumonitis or humidifier fever; and persons who are immunocompromised in any way, such as persons with HIV or AIDS. Even after the buildings are cleaned, dried and decontaminated, such persons should leave the building if they develop symptoms, until the problem can be investigated.

Anyone who develops unusual symptoms, such as the following, should seek immediate medical attention: wheezing, difficulty breathing, chest tightness, chronic cough, fever, rashes or hives, extreme respiratory irritation. Remember that this cleanup is being performed in an environment where you can potentially be exposed to hazardous materials. Furthermore, the stress of working harder than many people are used to could cause injury. Any unusual symptoms could signal serious exposure to hazardous chemical or biological materials, or another serious medical problem.

Wash hands and face frequently with antibacterial soap and drinking-quality water. When washing hands, scrub the areas under nails with a fingernail brush; dirt under the nails can harbor contaminated material. Wash hands and face before eating anything or smoking; contaminated material from dirt on the face and hands can be transferred to food or cigarettes, and ingested or inhaled. Avoid touching your eyes, mouth, ears, or nose with dirty hands. Keep in mind that personal cleanliness can be a major prevention of illness or disease.

Wash all cuts, abrasions, lacerations, and puncture wounds immediately with antibacterial soap and drinking-quality water for at least one minute, then apply an antibacterial salve and bandage. Have all deep cuts treated immediately by a medical professional. Infection can set in rapidly after injury. When in doubt about treating an injury, seek medical care.

Don't use showers, toilets, or other facilities until you are certain that the sanitary lines from the building are clear. Sewer water could back up into the building if the sewer or septic system is not working correctly.

General Safety Precautions:

Unless proven otherwise, consider all mud, debris and water pools to be hiding electrical shock, laceration or slip hazards, chemical or biological exposure hazards, or wild animals. First, verify that all power is out in the area before walking through mud or water, or before clearing debris. Shuffle walk through mud and water pools when entering for the first time. Lift debris in piles

with poles or sticks to check for hazards or wild animals before moving the debris. Inspect the building using only flashlights - never open flames of any kind.

Consider all pooled water inside and outside of the building to be biological or chemical exposure hazards, unless proven otherwise by qualified personnel. Don't permit children to play in water pools or mud. Attempts should be made to drain and dry the pools as soon as possible. Flooded basements should be emptied as soon as possible; but care should be taken to assure that the foundation will not collapse during draining. (Pressure from the water in the ground surrounding the foundation could cause the foundation to collapse.) If you don't know how to drain the basement without causing collapse, have a qualified person do it.

Consider all mold (a.k.a. fungi or mildew) and bacteria to be toxin producers. Some mold produce particles and volatile organic compounds that irritate most people's eyes and respiratory systems. But, some mold and bacteria have been linked to serious respiratory health problems and death. Risking exposure isn't worth the time that could be spent in recovery from illness, and definitely not worth death.

Unusual odors, or irritation of the skin and mucous membranes should be considered to be signs of toxic chemical exposure, unless proven otherwise by qualified personnel. Be aware that some toxic chemicals don't have odors that warn of their presence. If irritation of the skin or mucous membranes is encountered, leave the area immediately, wash the affected skin area with soap and water, and then be checked by medical personnel. Have qualified personnel check the area for chemical hazards before returning to it.

Combustion appliances and equipment will cause carbon monoxide poisoning when used in a building, unless proven otherwise by qualified personnel. Use all combustion equipment, such as gas-powered electrical generators and grills outside of the building. Make certain to locate them where their exhaust will not enter the building. Only heaters made to be used indoors should be used indoors; however, use them with caution and adequate ventilation. Follow manufacturers precautions about using combustion equipment. If you show symptoms of dizziness, chronic headaches or nausea, excessive tiredness, or a cherry red skin color, suspect carbon monoxide poisoning and seek medical care.

Any materials or furnishings that might have absorbed water (furniture, building materials, mattresses, etc.) could weigh over five times more than they did before flooding. (Water weighs 7 1/2 pounds per cubic foot.) Use caution when lifting anything, and lift with the legs. Remember that water can wick farther up some materials than the level of the water, so, an item might have absorbed more water than expected.

Don't connect electrical generators to the electrical systems of the building. This could be a shock hazard to those in the building or those working on power lines. Use generators to power only devices connected to extension cords. Make sure that all extension cords are protected by

ground fault circuit interrupters (GFCIs) and overload protectors. Make sure that the extension cords have adequate capacity to handle the equipment they are being used for, and that they are approved for use in wet areas. Don't use frayed or damaged extension cords. Follow all equipment safety precautions; even then, don't use equipment that you aren't skilled in using without supervision.

Use only wet/dry shop vacuums for vacuuming up water and wet materials. If possible, pipe the vacuum exhaust out of the building using additional length of vacuum hose. The exhaust could contain water aerosol from the material being vacuumed up. This aerosol might contain micro-biological materials.

All debris should be moved immediately to disposal containers, such as dumpsters, or placed in plastic garbage bags and sealed. Don't accumulate piles of debris that could be microbiological breeding grounds or hiding places for wild animals.

Fatigue, stress, and rushing leads to accidents. Don't overwork yourself and get plenty of rest. Don't rush the work or take short cuts.

Cleaning and Decontamination Procedures:

Note that surfaces should always be cleaned and decontaminated. The following procedure is used for cleaning and decontaminating surfaces that were under water inside post-flood buildings:

1. Remove debris and materials that cannot be shoveled or scooped. 2. Shovel or scoop up dirt and mud, and remove it from the building. 3. Wash all surfaces with clean water. 4. Wash with a soap or detergent solution. 5. Rinse with clean water. 6. Apply a disinfectant solution. 7. After 15 to 20 minutes, rinse the disinfecting solution off. 8. Remove as much water as possible using a wet/dry vacuum or dry cloths. 9. Air dry as rapidly as possible, without damaging the item.

Water used in cleaning should be clean water, but doesn’t have to be of the same quality as drinking water. Disinfectant solutions can be made from household bleach that contains at least 5.25% sodium hypochlorite. For porous, dirty surfaces (wood, cloth, concrete, etc.), one cup of bleach should be used for every 10 cups (about 1/2 gallon) of water. For non-porous, dirt-free surfaces (metal, glass, plastic, etc.), one cup of bleach should be used for every 100 cups (about 6 gallons) of water. Note that these concentrations are the maximum and minimum concentrations; they aren't absolutes. Use your judgment about concentration based on the surface to be disinfected. The more porous or rough a surface is, the more concentrated the bleach solution should be because porous or rough surfaces cannot be cleaned as effectively as non-porous or smooth surfaces.

Note that bleach can corrode, etch, lighten or otherwise negatively affect some materials, depending on the concentration. Small sections of a material should be tested with the bleach solution first to see if it affects the material. Be sure to leave the bleach solution on for as long as you would during the decontamination process. If the bleach solution harms the material, other disinfectants, such as Lysol or PineSol, can be used. Note that these other disinfectants can be used at any time instead of bleach. Bleach is less expensive, but as effective as the other disinfectants for decontaminating flood damaged items. Bleach should never be mixed with any other products unless the product label states that it is okay, because the bleach could react with them and produce hazardous gases. If in doubt, don't mix them.

Gloves need to be worn when using any cleaner, detergent, or disinfectant because the cleaner can cause skin problems. Furthermore, most cleaners and disinfectants contain respiratory irritants, whether or not masking fragrances have been added. Well ventilate the areas where cleaner and disinfectant solutions are mixed and used. Read and follow all safety precautions on the labels of the cleaner and disinfectant products you use.

Protective Equipment:

Use protective personal equipment. Required equipment should be long-sleeved shirts, long pants, goggles, head protection against bumps and falling debris, heavy-soled shoes or boots, and work gloves. Quality respirators are needed in areas where dust, mist or fibers are being generated into the air from cleanup or demolition work, and recommended in areas that have a musty odor. Heavy soled rubber boots or waders are needed when walking through water pools or deep mud.

Food and Drinking Water:

Drink only water you know is safe for drinking. Safe water is usually water in sealed bottles that weren't under water, water that has been stated as being safe by health officials, or water that you have treated according to health department guidelines. Wash and decontaminate any containers used for water before refilling.

Discard all food not in tin cans; it should be considered unfit to eat. Discard all food in tin cans that are swollen, leaking, or corroded. For the remaining tin cans, the Center for Disease Control (CDC) recommends removing their labels, washing and disinfecting them. Be sure to mark them to be able to identify their contents later. In all cases, when in doubt, throw it out.

Building Structure:

Unless qualified personnel state otherwise, the following are signs of unsafe structural conditions:

*buildings moved off of or shifted on their foundations; *washed out soil around foundations; *large cracks or gaps in foundations or basement walls that didn't exist before the flood; *missing floor joist, main beam, or porch roof supports; *sagging roofs, floors or ceilings; *floors that bounce or give when walked on; *walls that move when pushed; *gaps between steps and porches; *leaning walls; *loose ceiling or wall materials; *doors or windows stuck for reasons other than swelling due to water or whose frame is racked; *or other changes in the shape or structure of the building. *For buildings with chimneys, fireplaces, or other interior brick or stone structures, consider unusual gaps, cracks, loose materials, sags, misalignments or leaning in the structure to be signs of weak structure.

Never enter a building that has an unsafe structural condition until a qualified person checks out the building and the structure is properly braced or repaired. If the condition is found after entering the building, everyone should leave the building immediately, an inspector called in, and unsafe materials removed or structures braced before work resumes inside the building.

Electrical Systems:

Consider any downed power lines within one block of the building to be potential shock hazards until proven otherwise. (Electricity can travel for great distances through water, fence materials or other conductors, and some wires might be hidden in the mud.) Consider all wiring in buildings to be shock hazards until it has been checked out by a building inspector or electrician. Until then, turn the power off at the building's service panel. Have only persons knowledgeable about electrical shock hazards shut the power off. All electric circuit breakers, GFCIs and fuses that were under water need replacing. Switches and outlets that were under water can be cleaned and reused if still functional; but when in doubt, throw it out. All electrical motors that were under water need cleaning, drying and inspection by a qualified person before being put back in service. All light fixtures that were under water need to be opened, cleaned, dried and checked before being put back in service.

LP, Natural Gas and Fuel Oil Lines:

Consider all gas lines to be leaking unless proven otherwise by leak checks. Gas lines should be cut off at the service supply until after cleanup is completed and gas appliances have been serviced. All gas control valves on gas-combustion appliances that were under water need to be replaced. Leak checks need to be performed on all lines when the appliances are returned to service. At any time and even if the gas has been turned off, gas odors should be considered to be a sign of a leak, unless proven otherwise by fire or utility personnel. (Gas can travel underground from leaks in other locations.) When odors are detected, the building should be evacuated immediately and fire or utility personnel called in to check for leaks.

Oil tanks are considered to be leaking, unless proven otherwise. Shut the line off at the tank until after cleanup is completed and the oil furnace has been serviced. When the furnace is put back in service, check for leaking lines.

Building Materials:

Assume that any building materials (carpet, padding, wallboard, wallpaper, ceiling tiles, etc.) that are moist or wet 24 hours after the water recedes has mold growing on or in it, even if you cannot see or smell it. Do not closely sniff/smell the mold! Replaceable building materials that cannot be thoroughly cleaned, decontaminated and rapidly dried should be discarded. Irreplaceable building materials should be cleaned and decontaminated by professionals as soon as possible. Wall paneling made from wood laminates or vinyl might be cleaned and decontaminated, and reinstalled. Low-cost paneling, made of particle board for example, should be discarded. Consider all wall and floor coverings (for example, wallpaper, carpet, padding, and vinyl flooring) and insulation other than foam insulation to be contaminated with mold growth, and discard them if they are replaceable. Foam insulation needs to be cleaned, decontaminated, and dried thoroughly. Irreplaceable floor and wall coverings should be cleaned and decontaminated professionally as rapidly as possible. Remember, if in doubt, throw it out.

Consider all enclosed wall, ceiling and floor cavities that were under water to be areas where toxic mold or bacteria are growing. These cavities must be opened, cleaned, decontaminated, and thoroughly dried. In general, walls that were under water should be stripped to the studs and outer skin of the building up to about one foot above the flood line. The remaining wall cavity above the flood line should be checked for mold growth, and areas where mold is found growing should also be opened. Floor and ceiling cavities usually can have one side of the cavity exposed for work. Note that checking for mold growth in ceiling cavities above the flood line might also be prudent if these areas have gotten wet. Walls, ceilings and floor cavities with non-replaceable sheeting materials or wall coverings will need access holes made in each stud or joist cavity to allow cleaning, disinfecting and drying. These cavities should be professionally cleaned and decontaminated.

Building materials made from particle and wafer board that were under water should be discarded. Some of these materials swell when wet and will never return to their previous shape. Mold might have also grown within the material and be nearly impossible to remove.

Buildings built before 1975 might have asbestos or lead paint. Asbestos was used primarily as insulation or a tape on heating systems. Consider all white fibrous material used on heating system components to be asbestos and extremely hazardous. Loose or friable asbestos needs to be removed. Paint can be tested for lead using testing kits available at some building supply centers. If in doubt, have questionable materials checked by qualified personnel. If you find asbestos or lead, contact your state or federal Environmental Protection Agency (EPA) or Occupational Safety and Health Administration (OSHA), the National Institute for Occupational

Safety and Health (NIOSH) or an industrial hygiene firm for information on proper removal and disposal techniques.

Dry the interior of the building as rapidly as possible using dehumidifiers, heated air, and outdoor ventilation air. Using a wet/dry vacuum to pull water out of the materials will also help speed drying.

Personal Property:

Assume that any material that is moist or wet 24 hours after the water recedes has mold growing on or in it, even if you cannot see or smell it. Most paper items, and clothing and linens made from natural materials are highly susceptible to fungal growth. These items should be taken care of first.

∗ All personal items that are being kept and that were under water should be rinsed off. Clothing and linens should be laundered in hot water and dried in a dryer, or sent to a dry cleaner.

∗ Nonessential paper items should be discarded. Other paper items should be air dried. Photos can be wiped off and air dried. If possible, copy essential paper items after they have dried and discard the original. If you cannot tend to the paper items quickly, rinse and freeze them until you can.

∗ Discard all health and beauty supplies, cosmetics, bandages and medicines that were under water.

∗ Children's toys that are being kept should be cleaned and decontaminated before the children play with them.

∗ All other personal property will also most likely be contaminated. All replaceable property that cannot be cleaned, disinfected and dried thoroughly, such as upholstered furniture, and mattresses, should be discarded.

∗ Property made from particle or wafer board should also be discarded. Property that doesn't readily absorb water, such as metal or quality wood furniture, should be cleaned and decontaminated. Invaluable property that has absorbed water should be professionally cleaned and decontaminated. If possible, upholstering and fabric on irreplaceable furniture should be replaced. If these cannot be replaced, the fabric should be removed and decontaminated, and the stuffing replaced.

∗ Consider all electric appliances that were under water to be shock hazards. All appliances will need to be cleaned, decontaminated, dried thoroughly and checked before being used. Some

appliances might have to be discarded. Qualified appliance service personnel should do the work on larger appliances, and probably on the smaller ones too.

Heating, Ventilating, and Air Conditioning (HVAC) Systems:

The interior surfaces of HVAC equipment that were under water are reservoirs for mold and bacteria growth. The interior components of the air-handling unit (a.k.a. furnace, air conditioner, central air system) will need to be inspected, cleaned and decontaminated by professionals. Insulation inside the air-handling unit might need to be replaced if it is damaged or if it has mold growing on it.

Fans will need to be removed, cleaned, decontaminated and dried thoroughly before being placed back in the air-handling unit. Qualified service personnel need to replace the gas control valves on gas-combustion units. These personnel also need to clean, check and service the heating and air conditioning equipment, and control systems of all air-handling units that were under water.

Registers or diffusers can be removed, washed, decontaminated, and reinstalled. Unlined ductwork can be disassembled, washed, decontaminated, dried and reassembled by persons doing cleanup if they have the necessary skills. Lined ductwork should be checked and cleaned by professionals. If the lining in the ductwork is damaged or has mold growing on it, the insulation should be replaced. Duct board ducts should be replaced.

Exhaust fans need to be removed, cleaned, decontaminated and dried thoroughly before being reinstalled and put back in service. Persons doing the cleanup can do this work if they have the skills to do it.

Information Sources:

If you have any questions about information in this publication, please contact:

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Indoor Air Quality Solutions Blue Chip Builders, Inc. PO Box 75160 Kieley Place Bethel, OH 45106 Cincinnati, OH 45217 513-734-6868513-242-1300 513-734-6860 (FAX) 513-242-2338 (FAX) mkklein@cinti.net

Other information sources are:

American Red Cross
http://www.redcross.org/disaster

Centers for Disease Control and Prevention
National Center for Environmental Health
http://www.cdc.gov/nceh

Ohio State University Flood Updates
http://www.ag.ohio-state.edu/~flood97/

National Institute for Occupational Safety and Health (NIOSH)
Flood, Cleanup and Hazards
http://www.cdc.gov/niosh/flood.html

State of Ohio Department of Public Safety
Emergency Management Agency. Flooding Information
http://www.ema.ohio.gov/ema.asp

Appendix D2: Mold Remediation

Appendix D2 addresses the specifics of mold remediation for a moderate to major mold outbreak in the collection and/or building. See also Appendix D1 for general information on stabilizing and recovering a building that has been flooded and may be contaminated by bacteria, chemicals, and/or mold.

Introduction

"Mold" is a general term used to refer to a variety of fungal organisms. There are actually over 100,000 different types of fungi. Fungi depend on other organisms for sustenance, growing on organic materials and excreting enzymes that digest their food source. Fungi, or molds, can weaken and stain paper and bindings found in library collections, they can infest building materials such as wallboard and ceiling tiles, and they can grow in wall cavities and HVAC systems.

A constant, moderate temperature and relative humidity will discourage active mold growth. General cleanliness and the removal of dust and dirt also reduce the risk of infestation, and good air circulation can be helpful in avoiding a mold outbreak (although air circulation should be limited once mold has occurred, to avoid spreading mold spores).

There are a number of factors (including temperature, air circulation, and light) that influence the growth of mold in buildings and on collections, but **the single most important factor in mold growth is the moisture content of the materials on which the mold is growing**. In the presence of sufficient moisture, mold will become active—germinating and releasing spores that spread the mold further. In the absence of favorable conditions mold will become dormant, but the spores are always present.

While it is possible for mold to appear on collections when there is no obvious source of moisture∗, mold growth is most often the result of high humidity or dampness/wetness of collections (examples include flooding, the aftermath of a fire, or a serious breakdown of the HVAC system). Mold growth can be rampant if access is denied to the affected area after a

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∗ *Active mold is sometimes found on collections even when the materials are not wet and relative humidity does not appear to be in the danger zone. Only some books in the range may have mold, or it may appear only on the spines and not the pages. Generally the explanation for this is that the infected volumes have a higher equilibrium moisture content (EMC) than the books around them, and a higher EMC than would be expected given the ambient humidity level. In addition, certain types of mold germinate more easily on different types of materials (such as the starches found in certain types of bindings, etc.). In such cases, the books should be placed in an area with very low humidity (in an effort to lower their EMC) to deactivate the mold and cleaned according to the guidelines given in this section.*

disaster, as happened at the Pentagon Library after the 9/11 attacks. If relative humidity remains above 70% for more than 48 hours, some mold growth is very likely. In the case of flood or other water damage to a building, furnishings, and/or collections, experience has shown that mold will "blossom" on wet collections within 48 to 72 hours if action is not taken. Wet collections must be dried or frozen within that time, and buildings must be dried out. The two primary goals of mold remediation are to remove the moisture that is fueling the mold growth and to remove the mold from the collections and building elements that have been affected.

Health Risks of Mold

Increasing concern about the effects of mold exposure on human health is the primary reason for the precautions recommended in this disaster plan. While there are no federal or state regulations limiting exposure to molds, there is both scientific research and anecdotal evidence showing that inhalation of mold spores has the potential to cause a number of health problems that can range from minor to very serious, depending on the type of mold and the circumstances of exposure. It can sometimes be difficult to document the specific effects of mold because in many situations there are other potential contributing factors to illness—such as airborne pollutants, stress, etc.—but it is very important to take this issue seriously.

Health problems caused by mold range from allergic reactions (e.g., runny nose, eye irritation, cough and congestion, and/or asthma) to infectious diseases associated with particular types of mold (e.g., histoplasmosis, a disease caused by a fungus that flourishes in bird droppings) to toxic effects (e.g., skin irritation; or sudden fever, flu, or respiratory symptoms) that arise from exposure to chemicals (mycotoxins) produced by molds and contained in their spores. While the most serious of these health problems have been observed primarily in situations where there is repeated heavy exposure (such as in agricultural settings), some have also been reported in office settings, and situations in which there is heavy mold growth due to water damage pose an obvious hazard.

The practical effects of inhaling mold spores depend on several variables: the vulnerability of the person exposed (some people, particularly those with chronic respiratory diseases and/or vulnerable immune systems, are more susceptible to mold-induced illness than others), the length of time the person is exposed, and the type of mold (there are over 100,000 different species). In addition, once a person is sensitized to mold, subsequent exposure to even a very small amount will cause illness. In the past, it has been assumed that a limited exposure to a small amount of mold is not dangerous—BUT this may not be true for everyone. Always err on the side of caution.

It is very important to understand that even if mold is made dormant or killed, both the toxins it has produced and the structure of the fungal cells remain. These can still cause allergic reactions and other health problems, so mold remediation focuses on removing as much of the mold as

possible. This also means that it is necessary to use proper respiratory protection even when dealing with dormant or dead mold.

Protecting Yourself from Mold: Personal Protective Equipment

As noted above, it is impossible to specify "safe" or "unsafe" levels of exposure to mold. Any occurrence of mold must be dealt with promptly, and in a manner that safeguards everyone's health. Any staff members investigating a possible occurrence of mold, or working with moldy collections, must wear personal protective equipment (PPE). A dust mask with an elastic band does NOT provide sufficient protection.

PPE consists of an appropriate and properly fitted respirator, as well as protective clothing, gloves, and eyewear. Protective clothing can range from disposable overalls to disposable full body clothing, headgear, and foot coverings. Long gloves should be worn; ordinary household rubber gloves can be used if cleaning with only detergent and water, but stronger gloves (e.g., natural rubber or nitrile) should be used if strong cleaning solutions such as bleach are to be used. Respirators can be either half-face or full-face; if a half-face respirator is used, goggles must also be worn. Safety glasses or goggles with open vent holes should not be used, because it is necessary for the goggles to prevent small particles from entering.

There are two general types of respirators: air-purifying (which use filters, and can be disposable or reusable) and supplied air (which has its own source of air). There are, in turn, two types of air-purifying respirators: ***powered air-purifying respirators*** use a blower to create positive pressure by passing air through a filter into a mask or hood, while the ***non-powered air-purifying respirators*** simply filter the air as the user breathes in and out. The testing and certification of non-powered air-purifying respirators (the type used for mold remediation) by the National Institute for Occupational Safety and Health (NIOSH) is governed by regulations adopted in 1995 (42 CFR Part 84 *Respiratory Protection Devices*). These regulations upgrade and replace previous regulations for testing and certification that were set forth in 30 CFR Part 11. As of July 1998, the "NIOSH-approved" label has not been placed on any new filters for particulate respirators manufactured under the guidelines of 30 CFR Part 11.

Under 42 CFR Part 84, there are nine classes of particulate filters: three categories of filter efficiency (95%, 99%, and 99.97%--referring to the percentage of particles removed from the air) and three categories of filter efficiency degradation (N, R, and P—referring to the reduction in the ability of the filter to remove particles from the air over time). R- or P- series filters are recommended when oil or non-oil aerosols are present, while N-series filters should be used only for non-oil aerosols.

Since there are no official regulations governing exposure to mold, conservators and others working with moldy materials must use their best judgment in choosing a respirator and other protective equipment. The appropriate PPE will depend on the size of the mold problem and the

potential for health problems. As already noted, when unsure it is best to err on the side of caution. The EPA's guidelines on *Mold Remediation in Schools and Commercial Buildings* recommend that the minimum personal protective equipment (PPE) to be used when cleaning mold is an N95 non-powered air-purifying respirator, gloves, and eye protection; this recommendation is intended for those dealing with small areas of mold infestation. However, many conservators and vendors choose to use a non-powered air-purifying respirator with the highest class of filter (e.g., a P100 respirator, which has an efficiency of 99.97%) when dealing with mold. P100 filters provide the same level of protection as HEPA (high-efficiency particulate air) filters, which also filter 99.97% of particles that are .3 microns or larger. For a situation that involves very high levels of mold or long-term exposure, a full-face powered air-purifying respirator with a HEPA filter is recommended in the EPA's *Mold Remediation in Schools and Commercial Buildings*.

The use of respirators in the workplace is governed by the *Respiratory Protection Standard* 29 CFR 1910.134, adopted by the Occupational Safety and Health Administration (OSHA) in 1998. This standard specifies types of respirators to be used in various situations, fit testing procedures (e.g., tests to ensure that the respirator fits the wearer properly), and training procedures. A very general summary of requirements is provided here; see the explanatory materials on OSHA's web site (www.osha.gov) for additional information.

Once the proper respirator has been acquired, doctor certification is required before fit testing can proceed. A doctor must certify that the person who will be using the respirator does not have any health problems that would preclude safe use of the respirator. Potential problems might include asthma, heart disease, or pregnancy, all of which can cause breathing stress. Medical information required is specified in the OSHA *Standard*.

Fit testing ensures that the respirator, whether full-face or half-mask, fits properly. Note that people with facial hair or any other condition that interferes with the face-piece seal may not be able to wear a respirator. It must be done before initial use of the respirator, whenever a different face-piece is used, and at least annually thereafter. Fit testing also must be repeated if the person experiences any physical changes (such as significant weight loss or gain) that might affect the fit of the respirator. There are two protocols for fit testing, which must be carried out by someone who has been trained in the proper procedures: QNFT (quantitative) is complex and expensive, and used for supplied air respirators, while QLFT (qualitative) is simpler and cheaper, and used for air-purifying respirators. Protocols for testing are specified in the OSHA *Standard*.

Proper use and care of respirators, as well as proper training for staff members who are using them, is also essential. The *Standard* notes that the user must perform a face-piece seal check each time the respirator is used. Respirators must be cleaned frequently, and filters must be changed regularly. The *Standard* also specifies that training must be provided to respirator users prior to first use of the respirator, and retraining must be provided annually—or whenever conditions change or a new type of respirator is used.

Addressing a Serious Mold Problem

A serious mold problem is one that affects a significant portion of the collection and/or involves both the collection and the building. This type of situation almost always requires the assistance of an outside vendor (preferably one that has worked with cultural institutions before) to perform the mold remediation. This section is meant to provide a basic familiarity with remediation procedures, and to facilitate the process of working with a vendor.

Although there are no federal or state regulations governing mold remediation, useful guidelines for dealing with a mold problem have been developed by several agencies and organizations. These include: the New York City Department of Health and Mental Hygiene's *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*, and the Environmental Protection Agency's *Mold Remediation in Schools and Commercial Buildings*. These resources and others cited in Further Resources at the end of this appendix provide detailed information on procedures for mold remediation. Vendors used for mold remediation should be familiar with these guidelines and proceed according to their recommendations, which are broadly summarized below.

Assessing the Problem

There are several means of assessing a mold problem, the most straightforward of which is visual inspection of the building and collections. It is important to remember to check ventilation systems and hidden spaces (e.g., behind walls, which is often done by cutting out small portions of the building material) for the presence of mold. While visual inspection is often enough to document the need for remediation (particularly when mold growth is rampant), bulk/surface sampling, air sampling, or water sampling from the HVAC system are also sometimes used to provide additional information.

Bulk or surface sampling may be needed if it is not possible to determine the presence of mold through a visual inspection, or if it is necessary to determine the specific type of mold (e.g., if people in the space are experiencing symptoms that may be caused by mold exposure). Air sampling may be needed if the presence of mold cannot be identified through bulk/surface sampling, or it may be required (along with water sampling) if contamination of ventilation systems is suspected. In general, air sampling looks to see whether the profile of mold spores indoors is similar to that in the outdoor air. If there is a difference in the number and/or type of spores, there is likely to be a problem.

It is important to use a laboratory that specializes in mycology to examine and analyze any samples that are taken (likewise, it is important to collect samples properly – someone with experience should do this, or the laboratory should be asked to provide specific instructions). Sampling has drawbacks, and results can be misleading if sampling is not done properly.

Analysis of samples must be done using proper methods that follow guidelines recommended by organizations such as the American Industrial Hygiene Association (AIHA) and the American Conference of Governmental Industrial Hygienists (ACGIH). The AIHA offers accreditation to microbial laboratories through the Environmental Microbiology Laboratory Accreditation Program (EMLAP). See the Laboratory Services section of the AIHA web site at www.aiha.org for more information.

Building Remediation

The primary goals of building remediation are to address the source of the moisture problem (to prevent more mold from growing) and to remove the existing mold in a manner that prevents nearby areas from becoming contaminated. Both the New York City Department of Health and Mental Hygiene's *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* and the Environmental Protection Agency's *Mold Remediation in Schools and Commercial Buildings* provide recommendations for several levels of remediation, depending on the size and type of the area affected. Each level includes recommendations for personal protective equipment, containment of the affected area, removal of contaminated materials from the area, and cleaning methods. Recommendations for addressing contamination of the HVAC system are included. It is important to remember, however, that these recommendations are meant as guidelines only and should be modified as needed according to the situation and the professional judgment of those involved. Obviously if a particularly toxic mold species is identified or suspected, if mold contamination is very extensive, or if there are people who are highly sensitive to mold in the area, it is best to take all possible precautions during remediation.

In general, non-porous and semi-porous materials (e.g., metal, glass, wood, concrete) that are structurally sound can be cleaned. Some porous materials (e.g., ceiling tiles, insulation, wallboard that is extensively affected) should simply be removed and discarded. It is possible to clean porous materials such as fabrics and wallboard that is only slightly contaminated, but it is preferable to discard them.

Cleaning methods for building materials include wet vacuuming, steam cleaning for carpets and upholstered furniture that are to be retained, wiping surfaces with a water and detergent solution, and/or vacuuming with a HEPA-filtered vacuum. Any materials that are to be discarded should be sealed in plastic bags for disposal. If the infestation is serious enough to require containment of the affected area, the outsides of the plastic bags may need to be wiped and/or HEPA-vacuumed before they are disposed of. The use of bleach, or other disinfectants or biocides, is not usually necessary, since most molds can be removed with water, or water and detergent. Sterilization (e.g., complete removal of mold spores) is not possible, and mold spores that are present at normal levels will not pose a problem so long as the moisture problem that caused mold to grow has been resolved. Some biocides, such as pesticides or fungicides may also cause health problems for people and should be avoided for that reason.

Containment of the affected area will be needed in medium- to large-scale mold infestations. This can be achieved in a number of ways, ranging from taping plastic sheeting around the work area and adjacent areas, to sealing air ducts with plastic sheeting, to using an exhaust fan with a HEPA filter to generate negative pressure, to using airlocks and a decontamination room. Specific strategies will depend on the location and extent of the infestation.

Cleaning Moldy Collections

In the case of office buildings and homes, it is generally recommended that mold-infested materials like books and papers be discarded—but for libraries and archives, the cleaning of valuable or unique collections will be a priority. It is important to ask, however, whether or not the mold-infested materials need to be retained. Can items be discarded or replaced? For those items that must be retained, the focus should be on removing mold while avoiding contamination of collections that are not affected.

During the cleaning process, it is very important to document everything that is done (e.g., which materials are infested, the type of mold, the environmental conditions, the location of objects in temporary storage, the drying and cleaning methods that are used), since all of this information will be helpful if there is a recurrence of mold later.

It is also important to prevent cross-contamination between items and to prevent high levels of mold spores in the work area:

- Do not handle objects unless absolutely necessary, as handling dislodges spores into the air.
- Place objects in polyethylene bags during transport to the area where they will be cleaned.
- Reduce air movement in the work area.
- Wipe worktable surfaces periodically with disposable cloths, using a detergent solution, 70% ethyl alcohol, or a dilute bleach solution.
- Clean all tools, gloves, and respirators frequently during cleaning of objects.
- Place the object to be cleaned on a clean piece of paper, and when finished fold the paper into itself and dispose of it.
- When vacuuming, ensure that the vacuum exhaust does not cause air movement within the room; it is best to use a fume hood or to exhaust the vacuum to another room if possible.
- Place cleaned dry objects into polyethylene bags immediately to ensure they are not contaminated further.
- Dispose of vacuum bags, filters, and disposable protective clothing carefully, sealing them in plastic bags to minimize spreading of spores.

Remove mold only with a vacuum that contains a HEPA filter. Do not use a wet/dry vacuum; vacuums that filter air through water will not capture small particles of mold; they will be exhausted into the air. Even if the wet/dry vacuum contains a chemical to kill the mold, the dead spores that are expelled are still dangerous.

Do not vacuum fragile items directly, as the suction can damage them. Cover the vacuum nozzle with cheesecloth or screening to avoid picking up small pieces of the items. Papers or other flat items can be vacuumed through a plastic screen held down by weights. Boxes can be vacuumed directly. Remember not to clean active mold, since this may cause it to smear and embed into the item. Mold must be dormant (dry and powdery) before it can be vacuumed. If boxes and folders are damaged, they should be discarded and replaced with new ones.

Before collections are returned to the shelves, the shelves must be cleaned (either with a detergent solution or a fungicide such as diluted bleach, if necessary) and thoroughly dried to ensure that moisture will not cause additional mold growth. The area will need to be monitored routinely to ensure that the humidity remains at safe levels.

Choosing a Vendor for Mold Remediation

It is important to be aware that some water damage and mold recovery vendors may not understand the particular needs of library and archival collections. If it is possible to choose a vendor with experience in recovering library and archival collections from water damage and mold, you should do so. See Appendix B2 for a listing of national vendors with such experience.

If you choose to hire a vendor with less experience, you will need to ask a variety of questions to ensure that the work is done properly. Most of these vendors will provide supervisors, but the rest of the workers will be hired for the job. Thus, they will have little experience in cleaning mold and they will not know much about your collections and their needs. What will the ratio of supervisors to workers be? How will workers be trained? Are the workers properly insured? What health precautions will be taken for the workers? What techniques will they use when cleaning? Do they correspond with those described in the section on cleaning above? Can they provide you with a demonstration?

Try to be in contact with one or more vendors before a mold emergency occurs. A vendor's response to your emergency is likely to be much more enthusiastic if a prior relationship has been established. The institution has been in contact with the following vendor(s) regarding potential water damage and/or mold emergencies:

Name	Contact Person	Work Phone	Cell Phone

Further Resources

Nyberg, Sandra. "Invasion of the Giant Spore." SOLINET Preservation Services Leaflet Number 5. Atlanta, GA: Southeastern Library Network, 1987 (revised September 2005). Available online at http://www.lyrasis.org (click on Preservation Publications).

United States Environmental Protection Agency. Indoor Air-Mold. Available online at http://www.epa.gov/iaq/molds/. *Basic overview of mold issues, plus links to other resources.*

United States Environmental Protection Agency, Office of Air and Radiation, Indoor Environments Division. Mold Remediation in Schools and Commercial Buildings. EPA 402-K-01-001, March 2001. Available online at http://www.epa.gov/iaq/molds/mold_remediation.html.

National Institute for Occupational Safety and Health (NIOSH). Building Air Quality: A Guide for Building Owners and Faculty Managers. NIOSH Publication Number 91-114, 1991. Available online at http://www.cdc.gov/niosh/baqtoc.html. *A guide to diagnosing and resolving indoor air quality (IAQ) problems Has appendices on measurement of IAQ; HVAC systems and IAQ; and moisture, mold, and mildew.*

New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology, Guidelines on Assessment and Remediation of Fungi in Indoor Environments. January 2002. Available online at http://www.nyc.gov/html/doh/html/epi/epi-workerhealth.shtml. *Not specific to library collections, but provides information on health risks of mold exposure, environmental assessment, and procedures for cleanup of mold-infested buildings.*

Appendix D3: Sample Disaster Recovery Contract

Disaster Recovery Contract

This is a draft of a proposed **Disaster Recovery Contract** that the FLICC Preservation & Bindery Working Group has developed for Federal Agencies, especially Federal Libraries and Archives. A **Disaster Recovery Contract** is usually not in place at the time a disaster occurs, and will have to be instituted on an emergency basis after a disaster has occurred. The affected Federal Agency will have to work with their Procurement Office to put such a contract into place.

What follow are recommendations that should be in a Disaster Recovery Contract and what should be expected from a credible recovery firm.

The most critical part of the contract is developing a **SCOPE OF WORK** that describes the services to be preformed. The nature of the work to be preformed will have to be written in order to place the contract. The **SCOPE OF WORK** should be written using an institution's existing Disaster Preparedness Plan. The **SCOPE OF WORK** will have to be flexible, as the initial assessment of the disaster will often not reveal the full extent of the damage to the facility or to the collections. A major factor that must be considered is **SECURITY**. If a disaster site has been designated a crime scene due to a criminal activity or terrorism, security will become paramount. It will complicate your efforts for disaster recovery, as the disaster site will not be accessible until the security authorities release it. An additional security factor will be if the disaster site holds classified records. The procurement office in awarding the disaster recovery contract must address this concern. Another important consideration is the **TERMS of the CONTRACT.** The contract must start on a specific date and continue until the services have been rendered and the work described in the **SCOPE OF WORK** is completed. A third consideration is **PRICE**. This will have to be negotiated between the vendor, librarian/archivist and the procurement office. The vendor will have a rate schedule for standard items and the ability to obtain needed equipment at a cost plus price. It is vital to place the contract as soon as possible after the disaster to avoid additional damage to the facility and to the collections.

TIME IS CRITICAL IN A DISASTER. THE FASTER THE CONTRACT CAN BE PLACED, (WITHIN 24 to 48 HOURS), THE MORE LIKELY THAT THE FACILITY CAN BE STABILIZED AND THE DISASTER RECOVERY OF COLLECTIONS STARTED. THE LONGER THE WAIT-----THE HIGHER THE RECOVERY COST AND THE LESS CHANCE THAT RECOVERY EFFORTS WILL BE SUCCESSFUL.

Remember, that once the requirements are stated in the **SCOPE OF WORK** for the Disaster Recovery Contract, it is very important that the contract negotiations be followed very closely. The selection of the right contractor is absolutely essential for the clean up of a disaster site. A review of the contractor's qualifications is imperative and the Library/Archives must have input into the selection process.

This document deals primarily with the recovery of the site and the collections. For information on a sample Disaster Recovery Planning document for a Business Resumption Plan see the University of Toronto website at http://www.utoronto.ca/security/documentation/business_continuity/dis_rec_plan.htm. **It is an example of this type of a plan.** (Other plans will be added)

Some of the items you need to consider when writing the **SCOPE OF WORK** are described below.

Contract and Performance Specifications

Vendor Qualifications

Have the facilities, experience, qualifications, and expertise to provide professional advice and packing, freezing, and drying services to Federal Agencies affected by a disaster. Other services will include air treatment, smoke neutralization, sanitization, deodorization and the treatment and removal of mold. The recovery of damaged technology is another facet that must be considered.

Provide freezer and/or drying trucks, packing supplies, and personnel to assist Federal Agencies that have been affected by a disaster that is beyond their capability of handling.

Have systematic procedures and policies in place for the removal of library materials from a disaster-struck Federal Agency to ensure that all the materials have been identified, inventoried, and kept in as much order as possible given the situation in the Federal Agency.

Have the capacity to freeze large quantities of library materials if the quantity to be dried is too large for the current drying capacity of the firm due either to the current available space or the amount of the material.

Have the facilities and expertise to dry varying amounts of materials of varying degrees of humidity and to remove mold and decontaminate materials when necessary.

Have drying policies and procedures in place to determine when the materials have reached normal equilibrium. Ensure that all materials are completely dry.

When appropriate, have the capability, and/or arrangements, for cleaning the materials after they have been dried

Be capable of returning the materials to the affected Federal Agency in order, in appropriate boxes, etc., and in as usable a form as possible considering the degree of the disaster.

Required Services

Respond to a disaster scene within 24 hours of being called by the Federal Agency or designated preservation site. Provide the most practical and efficient options for the salvage, recovery and rehabilitation of the collections, whether this means packing, freezing, and vacuum-freeze drying; packing, freezing, and drying at another facility; drying the materials and building in place; or other options.

Freeze and completely dry the library and/or archival materials affected by a disaster and return these materials to the Federal Agency in usable form when completed.

During the drying process constantly monitor and manipulate the materials to ensure that they are completely dried and not stuck together.

Under the direction of Federal Agency staff or designated preservation professional, provide advice to affected libraries/archives, on their damaged materials.

Time and Materials Schedule

I. Labor

Operations Personnel Labor (Samples)

This listing applies to personnel engaged to fulfill the terms of the contract, whether regular full time employees of the vendor or temporary hires employed directly by the vendor or secured through a labor service. The rates, which will be established by the vendor, are per person per hour.

CLASSIFICATION
General Cleaning Laborer
Clerical
General Restoration Supervisor/ Technician
Remediation Supervisor/Technician
Resource Coordinator
Project Accountant

Assistant Superintendent
Electronics Restoration Supervisor/Technician
Industrial Corrosion Control
Supervisor/Technician
Documents Recovery Specialist
Superintendent
Project Manager
Project Director
Health and Safety Officer
Certified Industrial Hygienist
Technical Consultants/Engineers
Operation Technician
Variable Labor
Labor Pool (Temp labor)
Labor Management Fee

- Where customer supplies labor force

Dry – Laborer, Customer Site Dry Room Setup
Dry – Supervisor, Customer Site Dry Room Setup
File Jackets – Labor Only
File Labels – Labor Only
Fire Damage Edge Trim – Labor Only
Inventory Pack out – Supervisor
Inventory Pack out Labor – Laborer
Mold & Mildew Removal – Labor Only
Pack-In Labor – Laborer
Pack-In Labor – Supervisor
Pack out Labor – Laborer
Pack out Labor – Supervisor
Photo Copy Documents – Labor Only
Retrieval & Delivery Labor

(Time and one-half after 8 hours and on Saturdays. Double time on Sundays/Holidays)

A. Other Labor Provisions

1. Standard Hours - All labor rates are for the first 40 hours worked in a workweek, exclusive of the vendor holidays.

2. Non-Standard Hours - The rates for labor performed by all classifications in a work week over 40 hours, will be 1.5 times the rates scheduled. Rates for labor performed on the vendor recognized

holidays would be 2.0 times the rates scheduled. In the event the vendor is required to pay double time for any work performed, pursuant to State or Federal law or the terms of any collective bargaining agreement, the rates for such labor hours shall be 2.0 times the rates scheduled.

3. Travel time for personnel shall be billed to the contract at the rates provided by the vendor.

4. These rates and provisions are predicated upon the vendor standard wage rates and overtime compensation practices. To the extent the work under a particular contract is subject to Federal and State minimum wage or hour laws or collective bargaining agreements which modify the vendor standard rates and practices, adjustments shall be made to the hourly rates and other labor provisions stated above.

B. Consulting

These sample rates apply to personnel who have been retained to provide project management of a job.

CLASSIFICATION

Project Engineer/Scientist/Hygienist or other Environmental Specialists.
Preservation Consultants.
Project Manager
Superintendent
Accountant
Supervisor
Secretary/Clerical
Administrator

II. Equipment Rental

A. Equipment Rental of Vendor Owned Equipment

The vendor will establish rates that apply to equipment that is owned by the vendor and utilized in the performance of the work (whether supplied from the vendor inventory or specially purchased by the vendor for performance of the work).

CLASSIFICATION

Air Compressor
Air Mover/Carpet Dryer
Boroscope
Dehumidifiers
Distribution Panel
EDP - Tool Set
EDP - High Pressure Sprayer
EDP - Instrument Drying Oven
Foamer
Fogger - Spray Mist
Fogger - Thermo-Gen
Generator - Less than 100 Kilowatt
Heaters (In-Line)
HEPA Air Filtration Unit - 2000 CFM
High Pressure Moisture Extractors
HVAC - Air Tool Kit
HVAC - Cutting/Spray Kit
HVAC - Duct Auger
HVAC - Duct Sweeper
Hygrothermograph - Recording
Injectidry
Interseptor
Lambrite - Dry Clean Machine
Lights - Quartz Demolition
Micromanometer
Micromanometer - Recording
Moisture Meter - Penetrating or Non-Penetrating
Negative Air Machine
Ozone Generator - Model 330
Ozone Generator - Model 630
Radio - Personnel Communication
Refrigeration
    Cooling Coils Only
    Chillers
    DX Units
Refrigerant Dehumidification Units
Respirator
Sprayer - Industrial Airless
Steamtic 8100E Extraction System
Steamatic TMU Extraction System

Termohygrometer
Trailer - 40 ft. Storage
Trailer - Refrigerated 40 ft. Storage
Trailer - Utility (inclusive of mileage)
Truck - Box (inclusive of mileage)
Ultrasonic Decontamination Vat - 500 Watt
Vacuum - Barrel
Vacuum - Commercial Canister
Vacuum - EDP Anti-static
Vacuum - Handheld
Vacuum - HEPA
Vacuum - MV II
Vacuum - Upright
Van - Cargo/Passenger
Washer - High Pressure

1. The daily rental rate by the vendor shall be charged for each calendar day or portion thereof during which the equipment is utilized to perform the work, regardless of the number of shifts on which the equipment is used during the day.

2. During the course of performance of the work, the vendor may add additional equipment to the schedule above at rates to be determined by the vendor.

3. The customer shall pay for any repairs or maintenance performed on the equipment on the basis of cost plus (20%) twenty percent mark up.

4. In the event any item of rental equipment is damaged beyond reasonable repair by conditions at the work site, the customer shall be charged the replacement cost plus twenty percent.

B. Equipment Rented By The Vendor

The rental rate for any items of equipment the vendor rents from third party vendors specifically for use in performing the work shall be the vendor 's cost thereof plus twenty percent (20%).

III. Materials

A. Materials

CLASSIFICATION
Anti-Microbial Sealer
Applicators - 6" Cotton
Biocides/Disinfectants

Box - Book
Box - Dish
Box - Freeze Dry
Carpet Deodorizer
Cartridge - N-95
Cartridge - Respirator
Coil Cleaner
Cotton Cleaning Cloths
Desiccant 25
Desudser
Dry Solvent Stain Remover
EDP-Corrosion Control Lubricant #1
EDP-Corrosion Control Lubricant #2
EDP - VCI Device
Emulsifier - Powder
Emulsifier - Liquid
Filter - HEPA for Air Filtration Unit
Filter - HEPA for Vacuum
Filter - Primary
Filter - Secondary
Fireman's Friend Abrasive Compound
Furniture Blocks
Furniture Pads
Furniture Polish
Glass Cleaner
Gloves - Cotton
Gloves - Latex
Gloves - Leather
Gloves - Nimble Finger (N-Dex)
Goggles
Hexathane (MS, CS, or LO)
Lemon Oil
Mop Heads
Odormatic
Paper - Corrugated
Paper - Craft
Pigmented Sealer
Polishing Pads
Polyester Filter Material
Polyethylene Bags - 3-6 mil
Polyethylene Sheeting
Pump - Barrel Syphon

Reodorant
Restoration Sponge
Safety Glasses
Shrink Wrap
Stainless Steel Polish
Steel Wool
Suit - Tyvek
Tape - Boxing
Tape - Duct
Tape - Masking
Thermo Fog Spray
Trash Bags - Disposable
Vinyl & Leather Conditioner

Please note that vendors will have proprietary products.

B. Additional Provisions Respecting Materials

1. All prices shall be applied to all materials on the schedules above which are utilized in the performance of the work, whether shipped to the site from the vendor inventory, shipped directly to the site from the vendor 's sources, or purchased locally by the vendor from either an affiliated or non-affiliated entity.

2. During the course of performance of the work, the vendor may add additional materials to the schedule above at rates to be determined by the vendor.

IV. Document Remediation

Specific freeze drying costs will be determined *per job*, based on the factors relevant to each job and pricing per cubic foot.

These factors include, but are not limited to:

- Nature of Damage
- Moisture Saturation
- Degree of Char/Soot Residue
- Mold/Mildew Infestation
- Smoke Odor
- Deodorization Requirements
- Contamination Factors Include Debris, Sewage, Silt, and/or Hazardous Materials

The above rates represent the charges for freeze-drying only. Labor, equipment, materials and other costs incurred in connection with document remediation will be billed in accordance with the appropriate schedules and provisions.

V. Desiccant Dehumidification

Specific costs for Desiccant Dehumidification services will be determined *per job*, based on factors relevant to each job and pricing per square foot.

These factors include, but are not limited to:

- Nature of Damage
- Moisture Saturation
- Height of Buildings, Ceilings and Affected Space
- Length of Job and/or Time Constraints
- Other Contamination Factors

The above rates represent the charges for Desiccant Dehumidification only. Labor, equipment, materials and other costs incurred in connection with remediation, deodorization and other services will be billed in accordance with the appropriate schedules and provisions contained in this Exhibit.

VI. Small Tools

Items such as, shovels, ladders, demolition carts, extension cords, small hand tools, etc. are provided by the vendor but are not included in the Schedules above. The vendor shall be compensated for these items by application of a small tool charge in the amount of three percent (3%) of total labor billings.

A. Subcontract Services

The compensation paid the vendor for all services such as laboratory services, testing services, and other services which are not identified in Sections IV or V above or performed by individuals billed to the customer in accordance with Section I above, but are subcontracted by the vendor, shall be the vendor 's cost for such subcontract service plus twenty percent (20%) the vendor mark-up on such costs.

B. Travel, Lodging and Per Diem

The vendor shall be compensated for costs incurred for travel, lodging and per diem costs for vendor employees assigned to the work on the basis of the

vendor 's cost for such items plus twenty percent (20%) the vendor mark-up on such costs.

C. Freight/Transportation and Other Charges

The vendor shall be compensated for costs incurred for the transportation of equipment, supplies and materials to and from the site of work and for other job related charges not listed in the sections above on the basis of the vendor 's cost for such charges plus twenty percent (20%) the vendor mark-up on such charges.

D. Taxes and Permits

The rates contained in this schedule are exclusive of federal, state and local sales or use taxes and any applicable federal, state or local approvals, consents, permits, licenses and orders incident to performance of the work. The vendor shall be compensated for all costs incurred which are described above on the basis of the vendor 's actual cost incurred for such items.

Prepared by Robert E. Schnare, Co-Chair of the FLICC Preservation & Binding Working Group November 8, 2002. PLEASE NOTE: This document is now under revision.

Appendix E: CBR Hazards

Background Information for Appendix E: Chemical, Biological, and Radiological (CBR) Hazards

Chemical Hazards

Most libraries and archives house some chemicals that could pose a problem either in themselves (e.g., by spilling, exploding, etc.), by causing contamination in a flood, or by becoming hazardous in a fire. Cleaning chemicals may be present in janitorial closets, paints and solvents may be located in maintenance areas, and others may be used in microfilm, photograph processing, graphics, or conservation labs. Other chemicals and biohazards may be present if a medical facility or other scientific unit is located in your building. They are usually stored by color code. In a disaster situation, it is vitally important that emergency personnel know the nature and location of chemicals.

In this appendix, list locations of chemicals in the building. Even if the local command safety office has such a list, capture the information in your disaster plan and be sure it is linked to the master plan. Also be aware that chemicals should be stored in OSHA-approved cabinets.

If you know asbestos or PCBs are present, you should expand the scope of this appendix to include information about those hazards. Your local health and safety office should be able to assist.

A Material Safety Data Sheet (MSDS) must be retained for all chemicals as a result of OPNAVINST 5100.23d, Chapter 7, pp. 7-10, Paragraph 0708 e(6) and Paragraph 0702, pp. 7-1 to 7-6.

The following chemicals are typically retained in the building. For information or assistance regarding them, contact _____ *[specify person or position who knows about them and has access to them]*.

Under "Chemical," at least give the product or brand name; also give the scientific name whenever possible. Be as specific and precise as possible.

In the "Approximate Quantity" column, it is not important to give the precise quantity, but do provide an indication of the relative amount you typically maintain--e.g., a gallon or 50-gallon drums, a few ounces or hundred-pound bags, etc.

To supplement the "Location" information here, it is a good idea also to have floor plans that show the locations of these or other known hazards, as suggested in Floor Plans (Appendix K).

For "MSDS Location," name the office where Material Safety Data Sheets are retained.

Chemical	**Approximate Quantity**	**Location**	**MSDS**

Protection Against Airborne CBR Attacks

Since the events of September 11, 2001, awareness of the possibility of attacks using airborne chemical, biological, or radiological agents has increased. Preventive measures are addressed here; see the main body of this plan for emergency instructions for responding to such an event.

There are a number of resources available on protecting building environments from airborne chemical, biological, or radiological attacks, which are referenced below. While it is not possible to predict exactly what form an attack might take, it is possible to take steps to make a facility a less desirable target for such an attack. A brief overview of some actions that can be taken is provided here. **Before proceeding, it is crucial to analyze the risks faced by your agency and your building, and to consider the feasibility and cost of making changes to the facility.** In addition, the suggestions provided below apply only to airborne releases of CBR agents in quantities easily transportable by a few individuals. They do not apply to other types of attacks such as explosions, building collapses, and/or water supply contamination.

Before making any modifications to your building, conduct a survey of your building and systems, so that you know how they were meant to operate and how they are currently operating. In particular, do not make changes to the HVAC system without being aware of the effect those changes will have on the building environment and the building occupants. See Guidance for Protecting Building Environments from Chemical, Biological, or Radiological Attacks (referenced below) for specific questions to ask during a survey. Also, be aware that you should never permanently seal outdoor air intakes or interfere with the operation of fire protection equipment, due to the danger these actions pose to the building's occupants.

A crucial concern in preventing CBR attacks is access to the building's HVAC system, since it is a potential route for entry and distribution of CBR agents. Important actions that can be taken to reduce vulnerability include preventing access to outdoor air intakes (where a CBR agent could be introduced and then circulated through the building by the HVAC system) and preventing public access to all mechanical systems areas and to building roofs. Security measures (e.g., guards, alarms, cameras) and isolation of lobbies, mailrooms, and loading docks (e.g., entry points to the building) via separate HVAC systems and physical separation from the rest of the building can also be helpful.

Within the HVAC system, the HVAC controls should be evaluated to determine what options exist for using the controls to regulate airflow and pressure in different areas of the building during an emergency. If manipulation of the HVAC controls to slow the spread of a CBR agent within the building is possible, building staff in charge of the system should be trained to recognize the signs of a CBR event and respond quickly.

It is also possible to cut risk by increasing filter efficiency within the HVAC system. However, replacement of the current filters with higher efficiency ones may cause stress on the HVAC system, so this should not be done without careful analysis of the consequences. Seals around filters should also be examined to ensure that there is not excessive leakage of unfiltered air around the filters. Be aware that the particulate filters used in most HVAC systems would be effective against biological and radiological particles (provided they filter out particles the size of the CBR agent), but they are not effective against chemical agents, which require much more expensive filters that filter out gases and vapors.

When training staff members to respond to a CBR event, it should be emphasized that there are basic differences between chemical, biological, and radiological agents. In general, a chemical agent will cause immediate symptoms and the goal will be to minimize the amount to which people are exposed. A biological or radiological agent, on the other hand, will cause delayed symptoms. For a biological agent, the goal is to reduce the total number of people exposed and to make sure that you locate everyone who was exposed to reduce the likelihood of transmission to others. For a radiological agent, like a chemical agent, the goal is to minimize the amount to which people are exposed.

Further Resources

National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control (CDC). Guidance for Protecting Building Environments from Airborne Chemical, Biological, or Radiological Attacks, May 2002. Available at http://www.cdc.gov/niosh/docs/2003-136/2003-13.html. *Guidelines for evaluating a building and for making changes to reduce the risk of a CBR attack.*

Central Intelligence Agency. Chemical/Biological/Radiological Handbook, October 1998. Available at http://www.cia.gov/library/reports/general-reports-1/cbr_handbook/cbrbook.htm *Unclassified document that covers potential CBR events, differences between agents, common symptoms, etc.*

Lawrence Berkeley National Laboratory. Advice for Safeguarding Buildings Against Chemical or Biological Attack. Available at http://securebuildings.lbl.gov.

National Institute for Occupational Safety and Health (NIOSH). Building Air Quality: A Guide for Building Owners and Facility Managers, 1991. Available at http://www.cdc.gov/niosh/baqtoc.html. *A guide to diagnosing and resolving indoor air quality (IAQ) problems. Appendices on measurement of IAQ; HVAC systems and IAQ; and moisture, mold, and mildew.*

The _____ *[specify appropriate staff member]* is responsible for periodic evaluation of the building for vulnerability to CBR attack. This will be conducted _____ *[specify appropriate intervals of time, e.g., yearly, every six months]*.

The following actions have been taken to reduce the risk of CBR attack *[provide a summary here]*:

_____

_____

_____

_____

_____

In the event of a CBR attack within or outside the building, the following people have been trained in evaluation of the situation and in appropriate response procedures, such as manipulation of the HVAC controls *[specify trained staff member(s)]*:

Name	Title	Office Phone	Cell Phone	Beeper

Appendix F: Communication Plan

Background Information for Appendix F: Communication Plan

In this appendix, outline your plans for communicating with staff members, particularly members of the disaster team. Outline a strategy for notifying them of routine emergencies, but also list the systems and alternatives that can be used when regular telephone service is disrupted due to earthquake, flood, hurricane, or other natural disasters.

Routine Communication

In most cases telephone systems and other communication services will be operating routinely when recovery procedures are initiated. Once the _____ *[specify Operations Manager, Recovery Coordinator, or other staff authorized to initiate the disaster plan]* declares a disaster and initiates the disaster plan, notify team members according to the following plan:

1. The _____ *[specify Operations Manager, Recovery Coordinator, or other staff member]* will notify the following:

   List the senior disaster team members in the order you want them notified. It would be typical for first-phase notification to include the Chief Administrator, Chief Safety Officer, Collections Manager, Information Technology Manager, and Financial Liaison.

Name/Title	Work Phone	Home Phone	Cell Phone/Beeper

   Full contact information for each of those is available in the Staff List (Appendix A3).

2. If any of those first-phase contacts cannot be reached within _____ *[specify a time limit such as 1 hour]*, s/he will then attempt to reach the person designated as that person's alternate in the Disaster Team List (Appendix A1).

3. Those senior staff will call members of their teams, following the reporting order outlined in _____. *[You may cross-reference the Disaster Team appendix or specify the names and phone numbers here.]*

4. If any of those second-phase contacts cannot be reached within _____ *[specify a time limit such as 1 hour]*, the supervisor will then attempt to reach the person designated as that person's alternate in the Disaster Team List (Appendix A1).

NOTE: You may also wish to produce a graphic representation of the order of notification, perhaps in the form of a "communications tree" and issue this tree to each person involved.

Alternative Communication Strategies

A major natural disaster or other event may disrupt telephone service, which will complicate the notification of disaster team members.

1. When There Is Forewarning:

   The organization will generally have forewarning of disasters such as area flooding, hurricanes, and wildfires. In those cases, the following steps will be taken:

   - Prior to closing the building, the _____ *[specify Operations Manager, Recovery Coordinator, or other position]* will inform the staff when and where to rendezvous.

   - The _____ *[specify Chief Safety Officer or other position]* will distribute cell phones or beepers/pagers to the following staff members who do not have personal cell phones: *[Note: If you use this strategy, you must also distribute these numbers to all personnel who might need to contact them.]*

     _____ _____

     _____ _____

     _____ _____

     _____ _____

   - The _____ *[specify Chief Safety Officer or other position]* will instruct those staff members who have personal cell phones to charge them and leave them on or check for messages frequently. Staff will also be instructed to monitor their home email and to check in at the agency's website, at _____ *[provide web address]* for updates. *[Staff cell phone numbers and home email addresses can be found*

in the Staff List (Appendix A3). Ensure that all personnel have access to these numbers and to the appropriate web address.]

2. Without Forewarning:

In the event of a significant disaster such as an earthquake or tornado, much will depend on timing. If it occurs during working hours, most staff members will be on-site. If it occurs after-hours, all staff members will be expected to report for duty _____ *[specify a certain number of hours after the disaster or a certain time on the following day, keeping in mind that staff members may require some time at home to stabilize their own situations]* with the exception of (a) personnel on authorized leave and (b) personnel who have had family injuries or sustained property damage.

If notification is required, and both landline and cell phone services are unavailable, the following strategies may be used:

a. If possible, staff members will monitor their home email accounts and/or check the agency's e-mail server and web site at _____ *[provide web address]* for updates. *[Contacting staff through their home email addresses or posting information on the web may be the best option for those who have high-speed internet access at home, since data lines are often more stable and may be restored sooner than phone lines. Staff e-mail addresses are provided in the Staff List (Appendix A3); these addresses should be entered into the address books on the PCs of the Recovery Coordinator and other key staff.]*

   Indicate below the person(s) responsible for maintenance of the agency's web site in an emergency. *[This may be a staff member or a contact in the agency's information technology department. Provide both a primary contact and one or more backups. See "Emergency Procedures for Accessing Telecommunications and Online Services" in Appendix G for procedures to follow in case it is necessary to provide telecommunications and online services from an alternate site.]*

Name/Department/Title	Work/Home/Cell Phones	Email

b. Staff members will monitor radio station _____ for announcements. *[Before including this item in your plan, you must identify an AM station that agrees to carry your announcements (just as many announce school and business closings in inclement weather), and all staff members periodically must be reminded of this arrangement.]* **Have an extra supply of batteries on hand.**

c. Notification may be made in person by traveling to staff members' homes if roads are passable. Messengers for this purpose may include:

   · Members of the _____ *[specify a department such as the security office]*
   · Sheriff's Department
   · Red Cross

   [Before listing any organization above, be sure to contact its key personnel, explain your needs, and verify that they would be willing to provide such assistance in a large-scale disaster.]

d. Other: *[Specify any other methods that may be appropriate for you. Feasible options in some areas might include ham radio operators or CB radios.]*

   _____

   _____

   _____

   _____

Media Communications

This generally will not be a concern in routine emergencies. In the event of a large-scale disaster, communication with print and electronic media may serve several purposes:

- To let users/constituents know about the event, and provide updated progress reports to them about the extent of damage, expected re-opening date/time, alternate points of service, etc.;
- To solicit (directly or indirectly) volunteer workers and contributions of goods, services, and space; and
- To communicate with staff when phone service is inoperable.

This plan will be used when media communications are warranted:

1. _____ *[specify the Public Affairs Officer or other]*, in consultation with the Chief Administrator, will be responsible for preparing and distributing all media communications, including print and electronic.

2. Press releases will be distributed to the following:
   [Consider local newspaper, radio, and television stations. In addition, you may wish to include local, state, or national professional associations, as well as relevant Internet listservs and web sites.]

   Source Contact Person Phone/Cell Phone/Fax/E-mail

   _____

   _____

   _____

   _____

3. All communications, including requests for interviews, will be channeled through the _____ *[specify Public Affairs Officer or other]*.

Appendix G: Protecting Information Technology

Background Information for Appendix G1: Protecting Information Technology

Information Technology in Libraries and Archives

Over the past decade, libraries and archives have become increasingly dependent on computer technology to provide access to many different types of information.

While continuous access to electronic information is not as crucial for libraries and archives as it is in the business world (where losing access to electronic data for even a few hours may drive an organization out of business), patrons used to immediate access will seek information elsewhere if library and archives services are not available.

Depending on their size and complexity, libraries and archives may utilize a variety of computers and electronic resources, many of which are interrelated. These might include: online public catalogs, circulation systems, websites, and internal networks of various types that may provide public access to CD-ROM and tape-loaded or online databases, or provide staff access to internal databases and other administrative data. Stand-alone computers may also contain databases, financial information, and other important administrative data. Some libraries and archives have in-house information technology staff, while others have access to this expertise through their parent institution (e.g., a separate information technology department or office).

The traditional emphasis in library disaster planning has been on recovering the physical objects that make up the collection. From the perspective of information technology, however, the primary goal is generally not recovery of the physical object (although drying and cleaning of computer hardware, disks, and CDs may be a part of recovery efforts). Rather, the primary goals are to restore data using backups made prior to the disaster and to restore computer services for staff and patrons as quickly as possible. In working towards these goals, libraries and archives can learn a great deal from the business community's extensive experience with data backup and business resumption planning.

Potential Disasters

There are a number of scenarios that may lead to the loss of computers and/or electronic data. In addition to damage from a flood or fire, loss may be caused by: accidental erasure of data, hard drive failure, power surges, viruses and worms (which usually infect a computer through infected emails or spyware), power outage (local or widespread, such as the blackout in the Northeast in August 2003), and disruption or failure of telecommunications service (e.g., phone, cable, and Internet connections). One also has to take into consideration cyber-terrorism.

The cause and size of the problem will determine the scale of response needed.

Small-scale disasters that affect only one department or part of a building will require a less extensive response, but may still cause significant damage if important data is lost due to insufficient backup procedures. Serious disasters that affect the entire institution will interrupt services for at least a short time, and outside resources and assistance will be needed.

Large-scale disasters that affect an entire city or geographic area pose more problems, particularly from the perspective of information technology. In the case of such a disaster, power and telecommunications will be out for an extended period of time, resources in the surrounding community will be stretched to the limit, and recovery will be more drawn-out and difficult. Some suggestions that may be helpful for dealing with a large-scale disaster will be given here, but be sure to also consult the *Lessons Learned From 9/11* section of this workbook for additional information.

Prevention and Protection

Prevention and protection are the most crucial aspects of a disaster plan for information technology. Only careful advance planning will ensure that data can be recovered in the event of a disaster. If data is lost, the cost of reconstructing it will be enormous, if it is possible at all. In general, it takes one day to reenter one hour of lost data, and one week to reenter one day's worth of data.

Issues that must be considered in advance include: making backups of data, storing the backups properly, preparing and testing protocols for restoring data from backups, providing protective equipment for computers and hardware, arranging for appropriate insurance, and developing plans for continuing services to patrons in the event that access to the building is significantly delayed.

Backup Methods

Routine backing up of data (as well as associated software and operating systems) is certainly the single most important way to safeguard an organization's technology resources. However, backup procedures can be very complex in institutions that rely heavily on information technology, and data can easily "fall between the cracks." Not only must all data be backed up, the backup system must be tested periodically to ensure that it is working properly and that the backed up data is usable. It is also crucial to determine a policy for the length of time backups are retained. Some information technology departments may overwrite backups after six months, unless a longer retention period is specified.

There are a number of methods for backing up data; the one chosen will depend on the size of the library or archives, the resources (money, people) it has available, the types of technology it uses, and how long the institution is willing to have its services inaccessible in the event of a disaster.

The type of backup relied upon by institutions whose data is extremely critical and time-sensitive (e.g., financial institutions, the travel industry) is called *data mirroring* or *replication*. This means that for all data entered into the computer system, identical data is immediately and

automatically entered at a remote location – "mirroring" the original. This option is cost-prohibitive for most libraries and archives, but it does provide immediate access to the system and data in the event that the original is lost.

Data vaulting is a term used to describe remote backup facilities, which may handle short-term backup and/or long-term storage of data. Data vaulting is often used by businesses that have more data than can be backed up overnight. Data is transferred electronically several times daily (frequency is determined by the client) to the remote backup facility. Some digital storage facilities also provide long-term storage of data (Iron Mountain Digital Archives is one example). These companies store the data in standard formats and transfer it to new storage media as older ones become obsolete. However, it is the responsibility of the organization that owns the data to keep up with changes in the software and operating systems needed to access it.

For most libraries and archives that rely on networks, online catalogs and circulation systems, websites, and other electronic resources, regular backup onto tape is the most common and cost-effective method. This backup might be done by an information services department within the larger institution/agency, or by a systems librarian. Data backed up to tape is normally stored off-site with remote storage provider; the tapes can be physically transferred, or the data can be sent electronically.

For stand-alone PCs, data can be backed up onto diskettes, zip disks, CD-ROMs, flash memory cards, or internal tape drive. Again, off-site storage is crucial (this will be addressed in more detail below).

Backup Procedures

Because of the variety of electronic resources in use in many libraries today, it is crucial to carefully schedule backups and to ensure that all data of importance is being backed up. The situation may be further complicated if the library or archives is part of a larger institutional network. It may be a challenge to determine who is responsible for backing up what data.

At a minimum, data files that have been changed that day should be backed up daily, or several times each day if a lot of data is being entered. This is called *incremental backup*, and can be done automatically or by an individual. If backup is done at the end of every day, only one day's data entry will be lost if the disaster occurs during the day.

In addition to incremental backups, a *full backup* (e.g., a backup of all data in the system) must be done once a month at a minimum, and preferably once a week. Periodic full backup is necessary to ensure that dormant files or data that may be needed in future are not lost. A daily full backup would be the best choice, but is more time-consuming and costly.

Making multiple copies of backups is recommended, in case of failure of any one backup. Some businesses store daily backups both on-site and off-site locally, and also store a duplicate set of backups outside the local area in case of a widespread disaster.

Each institution must decide what backup procedures will be best. This will depend on how much data the organization is willing to risk losing (e.g., one hour, a few hours, a day's worth?). When making decisions about the frequency of backup, always consider the rule of thumb that it takes one day to reenter each hour of lost data.

What Should Be Backed Up?

Backup methods and responsibilities for backup may differ for a library's various types of information technology.

For local and wide area networks (LANs and WANs), which allow multiple users to work on one network concurrently, the network operator will back up data that is stored on the network server (this may be done within the library or by the overall organization's information systems department, if the library is part of a larger entity). The individual user must back up data stored on individual hard drives, even though their computer is part of the network. LANs or WANs may be used to provide public access to databases or for internal administrative and fiscal operations.

Most libraries today have an ILS (Integrated Library System), which includes an online public access catalog, an online circulation system (OPAC), and an online cataloging system, all of which must also be backed up. These may be backed up by an outside service provider or vendor, or internally; be sure that you have the necessary contact information, and that you know how frequently backup is done and who will reload the data in the event of a failure.

Many libraries also have a website, which may or may not be part of a larger institutional website, and which may or may not be interdependent with the OPAC and circulation system. Again, this may be hosted internally or by an outside service provider. If the library or institution's servers host the website, regular backup of the current layout and format will be needed. If an outside service provider is used, ensure that they do regular backup of the site in case they experience a disaster.

Unique data on stand-alone PCs must also be backed up; this data is most likely to be neglected, because it is the responsibility of the individual who uses the computer. Small libraries and archives with minimal electronic data may have crucial information stored on stand-alone PCs, while in larger libraries staff members may keep some unique data on their individual PCs. As already noted, it is also possible that some data stored on individual machines within a LAN or WAN may not be included in backups of the network.

Critical data files on stand-alone PCs should be backed up daily, with all files backed up weekly or monthly. It is generally recommended that email addresses and "favorite" websites, and calendars be backed up monthly. A virus check and a spyware removal program should be run at least once a week.

When backing up data, the software and operating systems that are needed to access the data must also be backed up. This is particularly important if any of these are older or obsolete. Originals of software that

is installed on the library or archives computers should be stored in a safe off-site location, along with any necessary passwords. If the institution has modified the software, the modified version must also be backed up and stored off-site. Similarly, the operating system software must be backed up. This is particularly important if it has been modified, or if it is proprietary.

One final note about backing up data and software: it is important to be sure that if a switch is planned to new computer(s) or system(s), backup for the old computer(s) or system(s) must continue until they are no longer in use.

Storing and Accessing Backups

The options for storage of backups are fairly straightforward. On-site storage of backups (e.g., next to the computer) is very common, but should not be the only storage strategy. It is an improvement to store additional backups in another part of the building, but it is best to store at least one copy of backups off-site entirely in case access to the building is not possible. In all cases, on-site storage in fireproof cabinets or safes is not recommended, as this may not protect magnetic media. For backups that are stored on site, you will need to know where they are, who can access them, and who knows how to reload the data.

Off-site storage for a very small library or archives could be as simple as bringing daily (or weekly, if the institution is willing to risk losing that much data) backups home, or to a bank vault. For libraries or archives with a greater dependence on information technology, backup tapes should be transferred off-site to a remote storage facility on a regular basis. Data can be physically transferred (data storage service providers will pick up daily or weekly), or it can be sent electronically, as already discussed.

It is not enough to simply send backup tapes to storage, however; the institution must maintain information on how to retrieve the backups if they are needed. Data storage service providers can range from simple storage companies to more sophisticated archiving services that strive to maintain the data so that it can be easily accessed. Ask questions to determine what services the data storage company can provide you in the event of a disaster.

You will need to know how quickly you can get access to the data (are services provided around the clock?), how long it will take to find your tapes, whether the tapes will be delivered or need to be picked up, whether the information can be sent through a secured data line if desired, and what the costs and time frames are for all of these options.

Finally, backups must be routinely tested to make sure that the backed up data is accessible and readable. Periodically the ability to upload backup data to the backup software should be tested.

Protecting Computer Equipment

There are a number of steps that can be taken to reduce the risk of damage to computer equipment.

Computer systems should be protected by an uninterruptible power supply (UPS), which is a battery backup that keeps the system running until power is restored or the system is shut down. This prevents loss of data due to computers crashing. The UPS needs to last as long as it takes to shut down the system properly, or a generator must be available to supplement the battery power. As with most technology, the UPS and/or backup generator should be tested periodically to be sure they are operating properly.

Individual computers should have surge protectors, and phone and data lines should have spike protectors, to protect from power surges. Anti-virus software and spyware removal software should be installed on all computers to reduce the risk of lost data due to viruses or worms.

Insurance

Most Navy libraries are self-insured (e.g., an internal fund is maintained by the agency to cover damage that may occur). A number of issues should be considered in an internal risk management program. Preparation must be made to meet the expenses described below.

Funds will be needed for:

- Replacing computers or drying, cleaning, and recertifying them, if that is deemed the best option.
- Renting space and equipment in a hot or cold site (discussed in the next section) for a specified amount of time.
- Physical recovery of damaged tapes, diskettes, etc., and/or reconstructing data.
- Coverage of expenses that will be incurred if the institution's building is inaccessible for an extended period of time. These expenses may include rental of temporary office space and equipment, hiring temporary staff, and paying salaries to existing staff.

It is important to prepare an inventory of all computer hardware and software as part of your disaster plan for information technology. An inventory will be needed in the event of a disaster, to assist in identifying damaged equipment and/or software and deciding on priorities for salvage.

Inventory of Computer Hardware and Software:

- Need to determine who is responsible for maintaining inventory
- Need to know where inventory data is kept and who has access to it.

Temporary Sites

If a disaster occurs that causes serious damage, operation of the library or archives information technology systems from an alternate site may be necessary. Arranging ahead of time for access to a temporary site can greatly speed up the restoration of services in the event of a disaster.

Several options exist within the business community for temporary sites. A *hot site* is

a commercially operated facility that is set up with hardware, software, telecommunications equipment, and everything else necessary to get the organization up and running as quickly as possible, usually within a few hours. A contract with a hot site provider must be put in place prior to a disaster and is expensive. Hot sites are generally used by businesses with very time-critical data. A *cold site* is also a commercial facility with power and climate control, but it is not set up with equipment. After a disaster, the organization must equip the site and bring in its data backups, which usually takes several days. Both options may be cost prohibitive for most libraries and archives, but as libraries become more and more dependent on information technology, this may change.

Another option is a *mobile recovery site*. This is essentially a movable trailer that is either wired for telecommunications or has satellite communications. These are sometimes used during smaller scale disasters such as water damage in a building.

Libraries and archives should also consider the possibility of a reciprocal arrangement with one or more nearby organizations that would have space and equipment to accommodate your computer systems if necessary.

The Information Technology Disaster Team

As noted in Appendix A of this workbook, the library and/or archives disaster team should include an information technology manager, who is responsible for the protection and recovery of the institution's computer systems and data.

In small libraries and archives with only a small amount of electronic data, a single individual may fill the role of information technology manager. However, in larger institutions a team may be needed to manage information technology. The makeup of the team will depend on the institution's organizational structure. In a large library, the team might consist of representatives from the various library departments that use technology (e.g., circulation, reference, technical services). If the library (large or small) is part of a larger parent institution, one or more representatives from the parent institution's information systems department must also be included. The ultimate goal of the team is to ensure clear responsibility for backup and recovery of the library's information technology resources.

In preparing a disaster plan for information technology, it is crucial to integrate this plan both with the disaster plan for the library and/or archives collections and with any overall plan for computer systems that may already exist within the library's parent institution. If the institution already has a plan for computer services, the library or archives may not be a high priority, so the library's disaster team will need to advocate for the importance of the library's services to the larger institution. Discussion and advance planning will greatly increase the chances that recovery will be successful.

Setting Priorities for Response and Recovery

Just as it is important to determine salvage priorities for collections before a disaster occurs, priorities for recovery of information

technology must be considered ahead of time. While it is impossible to predict ahead of time all the factors that may influence salvage decisions, advance consideration of the relative importance of the library's information technology resources will be very helpful when quick decisions are needed.

Consider various disaster scenarios, and determine the general order of restoration of individual computers, networks, and databases for each one. Decide which of the services the library provides is the most important and thus needs to be restored first. Since there may be competing priorities within the library and within the parent institution, it is best to work these out ahead of time to the extent possible.

For most libraries, the OPAC and the circulation system, and possibly the library web site, will probably be the highest priorities for restoration. However, the order of restoration of technology services will depend on the type and extent of the disaster.

If all or part of your collection is inaccessible, priorities may change. For example, the library of the Borough of Manhattan Community College, located very close to the World Trade Center, was inaccessible for 3 weeks after the attack, but the college and library web sites were restored after the first five days as a source of information for the college community. The library's web server was physically retrieved from the building a week after the attacks and set up at an alternate location, making it possible for staff and students to access the college's virtual library from off-site computers.

Scenarios to consider include: a local disaster that affects only the computer systems (such as a temporary local power outage or telecommunications failure); an area-wide disaster (such as the Northeast blackout of 2003) that does not damage collections but makes it difficult or impossible to provide services using technology; and a serious disaster that makes both the information technology systems and the collection inaccessible (this might or might not involve damage to the collections themselves).

During the prioritization process, the disaster-planning team needs to consider how long it will be acceptable to do without access to the computers and computer systems. Are there alternative means of accessing, for example, the public catalog or the interlibrary loan system? How long could these be used? If the library can only function for a very limited amount of time without its computer systems, consider making arrangements for another institution to provide services temporarily, or contracting with a hot or cold site ahead of time.

Response and Recovery

While response and recovery will differ according to the type and scale of the disaster and the systems affected, the following guidelines should be helpful for planning purposes.

Responsibilities of the Information Technology Disaster Response Team

There are four major areas of responsibility for the information technology disaster response team. Depending on the size of the institution and the composition of the team, one person may handle all aspects of response and recovery, or the responsibilities may be shared.

For teams with more than one member, a team leader will be needed. This person will supervise and coordinate all recovery activities relating to information technology, and will act as liaison to the overall disaster team leader. The other three areas of responsibility that may be needed are local operations (e.g., recovering damaged hardware and storage media on site, ordering new hardware if necessary, and reinstalling backup data and software on new or recovered hardware), remote operations (e.g., retrieving backed up data and software, and installing it at an alternative location), and troubleshooting (e.g., assisting staff in using the temporary or reconfigured hardware and software, whether on site or at a remote location).

Basic Disaster Response Steps for Information Technology

- In the event of a power outage, shut down the computer system as soon as possible (using battery backup or generator power) to prevent or minimize damage. Procedures for proper shutdown of the system should be included in your plan.

- If damage has occurred, determine the extent of the damage to computer systems and data. If systems may not have been damaged, but are inaccessible, determine how long this will last. Determine the impact of the disaster on the library's services.

- Decide whether or not the library can operate without the affected services (or conduct them manually) until damage can be repaired and data restored from backups, or until access to the systems can be regained. If the services must be restored sooner, an alternative site will be needed where backups can be installed onto rented equipment.

If the damage is minimal and/or the library will recover on site:

- Switch to manual operations for the affected services, if possible (e.g., circulate items manually, using predetermined procedures).

- Contact the institution's risk management office to determine how recovery will be financed.

- Clean and/or replace any damaged hardware, salvage any unique data that was not backed up, install data backups or new copies of software onto the new/recovered hardware, check for viruses, load the backup data, and check again for viruses. See Appendix Q4 for information on salvage of hardware and media (e.g., disks, CDs).

If operation from an alternative location will be necessary:

- Declare a disaster.

- Switch to manual operations (to the extent possible) until the alternative site has been set up.

- If the institution has a "mirror" site, switch operations to the remote site.

- If prior arrangements have been made for a hot site, arrange for data to be delivered to the site, if necessary. Check the hardware and software for viruses, then install data and check for viruses again. Confirm that the most current data has been installed, and switch affected library operations to the remote site.

- If prior arrangements have been made for a cold site, make arrangements for bringing in equipment and data backups for installation. Once the hardware and software have been installed, proceed as described above for a hot site.

- Assist staff members who need to access the computer systems at the remote site from other locations (e.g., providing reference service via email from home).

- Remember to backup all new and old data at the remote site (and to store it off site at a data storage facility) for the duration of the disaster.

- Proceed with restoration of the library's on-site systems as described above.

- Once on-site systems have been restored, synchronize the data and switch services from the remote site back to the library's primary site.

Testing the Information Technology Disaster Plan

Just as you should test your disaster plan for recovery of collections, the plan for recovery of information technology needs to be tested to ensure that all aspects will work as planned. In addition to periodic testing of backup tapes, procedures for restoration of the backups need to be tested. Make sure that more than one person knows how to partially and fully restore backed up data and software, and know how long restoration takes. Clear and simple instructions for restoration procedures should be provided in the disaster plan.

Appendix G: Protecting Information Technology

As discussed in the background information above, libraries and archives are increasingly dependent on information technology to provide services to their patrons. In the event of a disaster, you may need to reconstruct damaged files or software from on-site or off-site backups, and salvage or replace computer equipment and peripherals. If the disaster seriously damages your computer systems, or your building is inaccessible for some time, you may need to move computer operations to an off-site facility so that the library can continue to provide services. In this section, outline:

- *who is responsible for information technology systems within your institution;*
- *who to contact for help in the event of an emergency, including companies that can salvage computer equipment, data files, etc.;*
- *what information technology systems (e.g., hardware, software, networks, peripherals) exist in your institution;*
- *when and how routine backups are done, and who is responsible for doing them*
- *where on-site and off-site backups are stored;*
- *how to get access to off-site backup copies, particularly outside working hours;*
- *how to install backups and reconfigure systems;*
- *priorities for salvaging information technology systems within your institution;*
- *hot- and cold-sites you can use if computer systems must be transferred off-site, and how equipment, software, and data files will be moved to an alternate site; and*
- *plans for providing library services from an alternate site (e.g., accessing online subscription resources, accessing the online catalog, providing reference services).*

Oversight of all information technology systems for the library/archives is the responsibility of _____ *[specify the responsible position; this might be a library systems person or a representative from the information systems department of the parent institution, agency, or unit]*.

This person can be reached at: _____ (*work number and extension)*

_____ *(home number)*

_____ *(cell phone)*

_____ *(beeper*)

Emergency Contact Information

[This section should be used to provide a quick reference list of internal and external sources of assistance for problems with your information technology systems.]

In case of information systems failure or damage, the following departments, individuals, and companies are available to provide specialized services and information:

Emergency Numbers *[Some are suggested here; add others as appropriate.]*

Service	Name/Company	Contact Person	Work Phone	Cell/Beeper
Information Technology Department (for problems with hardware and software)				
Remote storage site for backups				
Internet service provider				
Web site host				
Online subscription service				
Regional online catalog				

Vendors *[It is a good idea to have more than one company for each service; be sure to include one located out of the area in case of a widespread disaster]*

Service	**Name/Company**	**Contact Person**	**Work Phone**	**Cell/Beeper**
Disaster recovery of data and computers				
Hot site				
Cold site				
Rental/purchase of hardware				

Inventory

[Use the following lists as a guideline for preparing an inventory of all hardware, software, peripherals, networks, and servers. It is important to keep a record not just of all computer equipment and software, but also of the configuration of computer systems (e.g., which software and peripherals are associated with which computers and/or networks). It is also helpful to list the general types of data found on each computer and/or network (e.g., financial information, administrative files, databases, websites). A list of barcodes could be critical in helping identify location/ownership of items.

In a library/archives with extensive information systems, these lists will be long and complex, but remember that they may already exist in whole or in part, either in the information systems department of the parent institution, or in the library itself. If this is the case, use the following form to expand upon or modify the existing list.

Include the following information (as appropriate) for each computer and/or network.]

Computer or Network Type (e.g., IBM, MAC, other): _____

_____

Serial Number: _____

UPS/Battery Backup Information (model/serial number, hours of power):

_____

_____

Hardware (e.g., CPU, hard drive, internal/external drives)

Type	Capacity	Speed	RAM	Other

Peripherals (e.g., monitors, printers, scanners, modems)

Type Model/serial number Attached to what port Other

_____

_____

_____

_____

_____

Software (e.g., operating systems, database and word processing programs, email software)

Type	Program/Version	Site License #	Serial #	Help Line #

Customized Software

Type Program /Version Date Last Modified Documentation

_____

_____

_____

_____

_____

Data (e.g., financial information, administrative files, personnel files, databases, websites)

Type	Program Name/Version	Department	Other

Diagrams of the configurations of computers and networks by department, floor, and/or building are as follows:

[Append appropriate diagrams here]

Backup Routines

The backup schedules for data, modified or unique software and operating systems, and computer system configurations are as follows:

[Provide the following information for each computer and/or network. All data, modified or unique software and operating systems, and setup configurations for hardware and networks that are listed in the Inventory must be included.

Description: describe the file(s), software, and/or system(s) being backed up.
Frequency: daily, weekly, monthly; on what day; at what time
Person Responsible: e.g, person who uses the computer, network administrator, etc.
Storage Medium: e.g., tape, disk
Backup Cycle: if backup tapes are reused periodically, describe the cycle (for example: backup done each week onto a new tape, with the oldest tape reused the fifth week).]

Description	Frequency	Person Responsible	Storage Medium	Backup Cycle

Storage and Access for On-Site Backups

Backups of data, modified or unique software and operating systems, and computer system configuration are stored on site in the following locations *[make sure that these listings match the listings provided in Backup Routines above]*:

Item(s)	Storage Location	Access Procedures	Contact Person	Phone (work, home, cell, beeper)

Copies of documentation and original disks/CDs for commercial software and operating systems are located **on-site** in the following locations:

Item(s)	Storage Location	Access Procedures	Contact Person	Phone (work, home, cell, beeper)

Provide any other pertinent information about **on-site** backups: *[Specify further details about access procedures, how long on-site backups are retained, whether they are transferred to off-site storage and when, and other relevant details.]*

_____

_____

_____

_____

_____

Storage and Access for Off-Site Backups

The following people are authorized to initiate retrieval of **off-site** backups:

Name	Department/Title	Phone/Extension	Home Phone	Cell/Beeper

Backups of data, modified or unique software and operating systems, and computer system configurations are stored off site in the following locations *[make sure that these listings match the listings provided in Backup Routines above]*:

Item(s)	Storage Location	Access Procedures	Contact Person	Phone (work, home, cell, beeper)

Copies of documentation and original disks/CDs for commercial software and operating systems are located **off-site** in the following locations:

Item(s)	Storage Location	Access Procedures	Contact Person	Phone (work, home, cell, beeper)

Directions and maps to all off-site storage facilities as well as alternative routes are as follows: *[Append directions and maps here.]*

Procedures for Installing and Reconfiguring Data, Hardware, and Software

The following people in the building know how to restore backed up data:

Name	Department/Title	Phone/Extension	Home Phone	Cell/Beeper

The following people know how to reinstall and reconfigure software and hardware in the event of a disaster:

Name	Department/Title	Phone/Extension	Home Phone	Cell/Beeper

Written procedures for restoring backed up data are as follows:

[If appropriate, provide simple instructions, including how long it takes to reformat a hard drive, install the operating system and software, and reload the data.]

If no one in the library or parent institution knows how to reconfigure software and hardware, or reinstall data, contact: *[Provide contact information for a disaster recovery firm that can restore the data and systems]*

_____

_____

_____

Self-Insurance/Risk Management Information

The institution's risk manager is:

Name _____

Title _____

Work Phone/Extension _____

Home Phone _____

Cell/Beeper _____

What risks have been planned for, and how much money would be available from the agency's self-insurance fund in the event of loss?

_____

_____

_____

_____

Describe arrangements for covering the cost of repair/replacement of computer equipment and/or restoration of data:

_____

_____

_____

_____

Describe arrangements for covering the costs of occupying temporary space and acquiring the necessary equipment to conduct business-as-usual in the event of a disaster that makes the building inaccessible:

_____

_____

_____

_____

Documenting Damage to Information Systems

Documenting damage to computer systems is the responsibility of:
_____ *[provide name and title]*. See the Emergency Contact Information section of this appendix for information on companies that can assist in repair and recovery.

[The following chart, adapted from a checklist in Disaster Response and Planning for Libraries, 2nd ed., by Miriam Kahn (Chicago: ALA, 2003: p. 99), can be used to document damage to computer systems.]

Computer component(s)	Serial #(s)	Type of Damage	Replace or repair	Contract service or self-perform	Contractor contact information	Cost (PO#)/ insurance coverage	Date of completion

Off-site Computer Operations

[As discussed in the background information above, a significant disaster that disrupts critical information technology systems functions may make it necessary to set up operations at an alternative site so that services can be continued. Pre-identify potential sites during the planning process, and provide information here about the facilities that are acceptable, what resources are available at those sites, and the procedures for transferring equipment, software, data files, etc. from your repository to the off-site facility.]

In the event of a disaster, it may be necessary to move some or all information systems functions off-site. In such cases, the following facilities may be used: *[List the sites you have investigated and found suitable for your functions. These may include commercial hot- and cold-sites, as well as allied units and agencies that have appropriate facilities and equipment.]*

Location (include address)	Type of Site (hot/cold/resources available at site)	Contact Person	Work Phone	Cell/ Beeper	Home Phone	Key Cards/ Keys

When computer operations must be transferred off-site, the following procedures will be used: *[Describe who will be responsible for the move, how hardware (if any) will be moved, how software and data files will be moved or backups retrieved.]*

_____

_____

_____

_____

_____

Emergency Procedures for Accessing Telecommunications and Online Services

[In the event of an emergency that requires the library or archives to provide services from an alternate site, it may be necessary for staff and/or patrons to access email, Internet, and online services from that site. This may be done by redirecting existing accounts, or it may be necessary to provide alternative ways to access online resources. In this section, provide appropriate information and instructions.

Be sure to indicate who within the library has authority to change/move Internet accounts or the library's website. Remember to include contact information and account numbers for any outside service providers (e.g., Internet service provider, web hosting service).]

Procedures for emergency remote access to telecommunications-dependent services are as follows:

Telephone/Voice Mail *[include procedures for switching fax and phone numbers to the remote site]*:

_____

_____

_____

Email *[may need to be accessed via modem or Internet]*:

_____

_____

_____

Intranet:

_____

_____

_____

Library Website:

_____

_____

_____

Online Catalog:

_____

_____

_____

Interlibrary Loan Operations:

_____

_____

_____

Online Subscription Services:

_____

_____

_____

Other:

_____

_____

_____

Procedures for Manual Operations

[During an emergency, it may be necessary to switch to manual operations for a limited time, either until computer systems are back up or until services can be switched to an alternate location. In this section, provide instructions for conducting services such as circulation manually.]

_____

_____

_____

_____

_____

Priorities for Restoration of Information Systems

[In this section, provide general priorities for restoration of systems in the event of a disaster. For most libraries, the circulation system and the online catalog, and possibly the website, will be a high priority. Restoring email and voice mail may also be very important. Final decisions about restoration will of course depend on the extent and type of the damage. The following chart, adapted from Kahn, Protecting Your Library's Digital Sources (Chicago: ALA, 2004: p. 80), can be used to list priorities.]

System/Function	Contents	Location/Department/ Contact Information	Priority Level

Salvage of Computers and Data

In the event that computer equipment, tapes, or other devices are damaged in a disaster, _____ *[specify appropriate position]* will be responsible for recovery operations. See Emergency Contact Information above and Appendix Q4 for salvage procedures for computer media (e.g., diskettes, CDs).

Appendix H: Emergency Funds

Background Information for Appendix H: Emergency Funds

This appendix describes funds available for use in disaster recovery and outlines the necessary authorizations and other procedures for using cash, credit card, and purchase orders and requisitions. Be sure to include who has authorization to sign purchase orders or use credit cards. Issues related to insurance coverage, amounts, and procedures are addressed in Appendix N.

Available Funds

[Describe the funds available for disaster recovery. If your organization has a fund earmarked for this purpose, describe it, including the fund number or code and other relevant information. Do not include insurance issues here, as they are covered in Appendix N.]

Credit Card

[Describe the procedures for getting access to and using the government credit card. Include procedures to be followed in routine times--during the work day, when regular procedures and personnel are in place--and in times of emergency, such as at night and on weekends, or when a disaster has disrupted procedures and key financial staff may not be available.]

Purchase Orders and Requisitions

[Describe the procedures for getting purchase orders and requisitions. Outline the normal procedures-those to be followed during normal business hours when regular procedures and personnel are in place--and those to be used in times of emergency, such as at night and on weekends, or when a disaster has disrupted procedures and key financial staff may not be available.]

Other Information

[Provide other information required by your organization. Consider listing major companies in your area with whom you may have standing accounts.]

Appendix I: Evacuation

Appendix I: Evacuation

This plan provides instructions to be used during emergency evacuations for the protection and safety of building occupants. It is subject to change, either by written or oral directive of the _____ *[specify appropriate safety officer]* or his/her designated alternate, when certain emergency conditions arise. The plan will be followed in case of fire, bomb threat, tornado, or other threat to life and property.

Authorization

The following are authorized to order evacuation of the building (for other than automated emergency alarms):

Name/Title	Office Phone	Home Phone/Beeper

Membership and Assignments

The evacuation team is comprised of the following persons: *[Include appropriate personnel such as suggested here. Multiple Floor Wardens are necessary in most libraries and archives. Consult with your safety officer to determine the number of wardens needed in your building and the areas for which they should be responsible.]*

	Primary	Alternate
Safety Officer		

Floor Wardens

Floor/Area

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

First Aid Officer _____

Responsibilities

The evacuation team will oversee the evacuation of the building when necessary. Its primary responsibility is the safety and welfare of the staff and patrons.

Under no circumstances are staff to endanger their own lives in the evacuation process. If there are any questions about building safety, the evacuation team should evacuate the building until appropriate emergency personnel arrive.

A. Safety Officer-upon receipt of an alarm signal- responds immediately to the area(s) involved.

B. Floor Warden

1. Preparedness Responsibilities

a. Become familiar with all aspects of his/her assigned floor, such as special hazards, exit locations, locations of alarm pull stations, fire-fighting equipment, work locations of handicapped personnel, etc.

b. Maintain a roster of all personnel assigned to his/her floor, identify and locate all handicapped individuals and the personnel assigned to assist in their evacuation, and keep this roster up to date. Each Floor Warden shall inform the Chief Safety Officer of any changes in personnel on his/her assigned floor.

c. Designate an alternate Floor Warden to take over responsibilities during his/her absence. Appoint stairwell and elevator monitors, office wardens, and their alternates as necessary. Keep the Chief Safety Officer informed of all assignments and changes of assignments.

d. Inform personnel on his/her floor, especially newly assigned personnel, of location of nearest exit, any changes in emergency procedures, and changes in assignment of duties on that floor.

e. Train personnel in the use of fire extinguishers and any special emergency procedures, especially those for hazardous areas.

2. Evacuation Responsibilities

a. Have authority (for the duration of the evacuation) over all personnel assigned to his/her floor. There will be no exceptions.

b. Upon receipt of an alarm signal, oversee the evacuation of all offices, determining that everyone leaves the building in an orderly manner.

c. Check rest rooms, storage rooms, file rooms, etc. to be certain that every room is empty. Close all doors and turn off all lights as she/he goes. Special attention will be given to the elevator on each floor; it will be the last place checked.

d. Gather any assistants and leave the building.

e. Report to the _____ *[specify a security officer or physical area to which the Floor Warden reports]* that his/her floor is clear, also reporting injuries sustained by personnel assigned to his/her floor. She/he also will notify the _____ *[specify a security officer or other appropriate position]* of the location and number of handicapped persons and those assigned to assist them.

C. First Aid Officer (in his/her absence, the Safety Officer)

1. Maintain supplies in all first aid kits. Keep them current!

2. In the event of an emergency evacuation, remove the first aid kit from _____ *[specify location]* and establish a first aid station at a designated location for medical care to be administered.

Evacuation Because of Fire Alarm

[When developing your evacuation plan, consult with your fire department and/or disability officer for guidance on planning for the evacuation of handicapped persons. In most cases, handicapped persons should go to an exit stairwell and wait for assistance from personnel who have been designated in advance to help them.]

Notice to evacuate is indicated by the fire alarm system, which warns building occupants of danger and that the building should be evacuated. In the event of a fire alarm, follow these steps:

1. Turn off all lights and close all doors. Do not lock doors, unless necessary for security purposes.

2. Evacuate to the nearest safe exit. Do not use the elevator. Evacuation routes are posted throughout the building near stairways and exit routes.

3. Take handicapped visitors or staff members to _____ *[specify a location, after consultation with fire department or other safety personnel]*. These persons will be assisted in evacuating the building by _____ *[specify persons responsible for each floor]*. If a problem occurs in the evacuation of handicapped persons, call _____ *[specify responsible unit such as security]* for assistance.

4. Assemble at _____. *[Specify a safe location outside the building. If there is any risk of explosion, the location should not be near the building. Consult with the fire department for guidance.]*

5. If safe to remain in the building, _____ *[specify a person such as a security officer]* will locate the reason for the alarm while the fire department is en route.

6. _____ *[specify responsible unit such as security]* will escort the fire department to the location of the problem.

After evacuating the building, personnel will assemble at the designated point for a head count. Once the fire department verifies that the building is safe to re-enter, _____ *[specify responsible unit such as security]* will notify personnel. Personnel should remember that all exits must be monitored during an evacuation of the building. _____ *[specify responsible unit such as security]* will cover as many exits as possible.

Evacuation of Handicapped Persons

[When developing your evacuation plan, consult with your fire department and/or disability officer for guidance on planning for the evacuation of handicapped persons. In most cases, handicapped persons should go to an exit stairwell and wait for assistance from personnel who have been designated in advance to help them.]

Handicapped visitors or staff members should be taken to _____ *[specify a location after consultation with fire department or other safety personnel]*. These persons will be assisted in evacuating the building by _____ *[specify persons responsible for each floor]*. If a problem occurs in the evacuation of handicapped persons, call _____ *[specify responsible unit such as security]* for assistance.

Special Events

Specify procedures to be followed when an evacuation occurs during special events (meetings, lectures, after-hours social functions, etc.) with guests in attendance.

_____

_____

_____

_____

_____

_____

Exits

Give the locations of exits in your building. If one of your floor plans shows the locations of exits, cross-reference that diagram here.

Appendix J: Fire Safety

Background Information for Appendix J: Fire Safety

[See the chapter on Disaster Planning for Museums and Historic Sites in this workbook for additional information on fire safety.]

There is no disagreement that the Fire Department's goal in a fire is to safeguard human life and to extinguish a fire as quickly as possible. Nationwide, firefighters are increasingly aware of the special issues involved in fire-fighting in libraries and archives. For example, it may be possible to use lower-pressure hose nozzles to reduce water-flow volume. If firefighters know the locations of high-priority collections, they may be able to throw tarpaulins over important areas or to drive the fire away from those collections.

Liaison and Training

Regular communication between the repository and the Fire Department will promote the overall goal of fire safety. Firefighters need to understand the special issues involved in disaster recovery for library and archival collections, and it may be useful for them to attend some in-service training sessions on library and archival disaster recovery.

Librarians and archivists must understand the Fire Department's incident command system, and the repository's plans should reflect the personnel and equipment resources that the Fire Department can provide. It may be useful to have Fire Department staff lead training sessions in evacuation, fire extinguisher operation, and so on.

The fire department may have skills and resources that the repository does not know about. For example, many are equipped and prepared to deal with water emergencies. It is not unusual for them to carry equipment such as pumps, water vacuums, hand trucks, and an assortment of tools. They may be a valuable and immediately available source of equipment and personnel.

A great deal can be achieved during the Fire Marshal's safety inspections of the repository. Walk through the building with the Fire Marshal, and point out high-priority collections. The Fire Marshal is a vital link in your fire safety program. Be open and frank about issues that concern you regarding the building structure, systems, and use practices. Be sure the Fire Department has up-to-date floor plans (including ones that show the locations of high-priority collections). Solicit ideas on how you can make the building safer for firefighters. Keeping aisles clear and marking step-stools or other obstructions with phosphorescent tape are obviously helpful. The Fire Marshal may have other recommendations.

Security

The majority of library and archives fires are set by arsonists. One report puts the figure at 77%. Therefore, effective security systems

and procedures are a cornerstone of fire safety. Be sure your closing procedures are adequate to ensure that no one remains in the building after-hours. Intrusion systems and motion sensors are a wise investment to guard against arsonists when the building is closed.

Detection and Signaling

Although fire codes may only require manual pull alarms, these are not sufficient to protect the collections. Seventy percent of fires occur between 9:00 p.m. and 9:00 a.m.--hours when the building is probably unoccupied, and no one would be present to sound an alarm. There *must* be automatic detectors as well.

For firefighters to be successful, they must get the earliest possible notification. This requires that your detectors be wired directly to the Fire Department or to another office (such as security) that is monitored 24 hours a day, 7 days a week.

Fire develops in four stages:

1. chemical products only. The first stage of combustion is a chemical reaction in which a carbon-based material (fuel, such as wood or paper) mixes with oxygen and is heated to a point where flammable vapors are produced. At this point, there are no visible signs or smells. This stage may last from a few minutes to several hours.

2. smoke.

3. flame.

4. heat. Temperatures will quickly reach 1,800°F (1,000°C). Within only three to five minutes, the temperature may be high enough to "flash," igniting all combustibles within the space.[15]

For earliest detection of typical fires, use smoke detectors (also called photoelectric detectors) in combination with ionization (or "products of combustion") detectors.

Your building may contain materials that could explode. This could happen in a conservation laboratory, photographic processing unit, or other areas where chemicals are stored. Flame detectors are appropriate for those areas.

Thermal detectors are triggered at a specified temperature or designed to sound an alarm when the temperature rises at a specified rate. They do not provide adequate safety for libraries, archives, or other cultural institutions. By the time sufficient heat is present, the fire is well advanced.

Detectors must be tested at the recommended frequency and by appropriate methods. Your fire department or alarm system provider can provide guidelines.

Fire Suppression

Libraries and archives should rely on automatic sprinkler systems, but also provide

[15] Nick Artim, "An Introduction to Automatic Fire Sprinklers, Part 1," *WAAC Newsletter* 16, no. 3 (Sept. 1994), p. 20.

portable extinguishers for judicious use by staff.

Portable Extinguishers

Extinguishers are classified according to the type of fire they combat. There are three major classifications:

- Type A: for solid combustibles such as wood and paper
- Type B: for flammable liquids such as grease and oil
- Type C: for electrical fires

Extinguishers filled with pressurized water are suitable only for type A fires. These extinguishers are quite heavy.

Carbon dioxide extinguishers are effective on both B and C type fires. They, too, are heavy. A 15-pound BC extinguisher will discharge for 15-30 seconds, and it must be used just 3-8 feet from the fire.

Dry-chemical extinguishers are rated for types A, B, and C fires. The most common type uses a chemical that is very caustic and difficult to clean up. They can be used 5-12 feet from the fire base.

Portable Halon extinguishers may be rated for A, B, and C class fires, but they are only effective if the fire is in an enclosed space such as inside a photocopier or a computer. Because Halon is an ozone-depleting substance, its production is highly controlled and it is increasingly scarce and expensive. Halon alternatives are now available. Consult your local fire department for information about the options and their appropriate uses.

Choose the appropriate extinguisher for your application. Carbon dioxide and other BC extinguishers are suitable for mechanical rooms, where fires are likely to be electrical or flammable liquid. Pressurized water extinguishers (rated for type A fires) will extinguish paper- and wood-based fire, but their weight makes them unsuitable in many repositories. Dry-chemical ABC extinguishers are excellent for all-around purposes, but the chemical is quite corrosive, so clean-up must occur promptly after their use.

Portable extinguishers are fairly simple to use, but trained personnel can use them with greater confidence and effectiveness. Many institutions want their staff to evacuate immediately rather than try to fight a fire. However, in some buildings, a fire could break out between people and the exit, so using an extinguisher could be a person's only way out of the building. In addition, trained staff will be more sensible about whether the fire is small enough to control with an extinguisher. Schedule training sessions at least once a year in which Fire Department personnel provide hands-on training for the library or archives staff.

Sprinkler Systems

Water-based automatic sprinkler systems are the most reliable, safe, and effective means of fire suppression. Librarians' and archivists' bias against sprinkler systems has endured far beyond reason. The fear of massive water damage dates from the introduction of these devices. Current insurance statistics indicate a failure rate of approximately 1 sprinkler head per 16 million sprinklers installed per

year.[16] Nor is there justification for the fear that entire floors will be deluged to douse a small fire. Today's sprinkler heads are individually activated, and approximately 61% of all sprinkler-controlled fires are extinguished by just one or 2 sprinkler heads.[17] Water damage from a sprinkler is not generally great. A sprinkler typically discharges approximately 25 gallons of water per minute, while a fire department hose delivers 100-500 gallons per minute.[18] Modern sprinkler systems typically include a water-flow alarm, which reduces the risk of an undetected sprinkler discharge.

The basic components of a sprinkler system are the sprinklers, system piping, and a water source. Most also include a water-flow alarm, control valves, and testing devices.

Sprinkler Heads

Sprinkler heads use a linkage device that is heat-sensitive. As long as temperatures are in the normal range, the head stays closed, so water cannot flow through it. But when the temperature reaches a specified temperature, the linkage melts or breaks, allowing water to flow onto the fire. Linkages may be metal or glass, and generally have operating temperatures between 135° and 225°F.

In recent years, the on/off sprinkler head has been introduced. It responds to fire like a conventional head, but when the fire is extinguished and temperatures fall back to the normal range, a bimetallic disk on the sprinkler head closes and stops the water flow. It is capable of opening again if the fire reignites and temperature rises again.

In theory, the on/off sprinkler could reduce the volume of water used in fire suppression. However, in practice, firefighters generally arrive and can close sprinkler system valves before these sprinklers shut off. On/off sprinklers also cost 8 to 10 times as much as conventional ones, and their greater complexity makes them less foolproof. For most institutions, conventional sprinklers are the better choice.

Sprinkler Piping Systems

There are three major types of sprinkler systems: wet-pipe, dry-pipe, and pre-action systems.

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[16] This text has been developed in close consultation with two excellent publications. Michael Trinkley, *Can You Stand the Heat? A Fire Safety Primer for Libraries, Archives and Museums* (Atlanta: SOLINET, 1993), provides what may be the best single resource on fire safety for cultural institutions, and the author's views were shaped by that text. An excellent, brief overview is provided by Nick Artim, "An Introduction to Automatic Fire Sprinklers," *WAAC Newsletter* 16, no. 3 (Sept. 1994), pp. 20-27 and 17, no. 2 (May 1995), pp. 23-28. Some of Artim's explanations have been closely paraphrased in this discussion of sprinklers. See also Artim, Nick, "An Introduction to Fire Detection, Alarm, and Automatic Fire Sprinklers" in Preservation of Library and Archival Materials: A Manual, 3rd ed. Andover, MA: NEDCC, 1999.

[16] Nick Artim, "An Introduction to Automatic Fire Sprinklers, Part 2," *WAAC Newsletter* 17, no. 2 (May 1995), p. 26.

[17] Artim, "Part 2," p. 26.

[18] Artim, "Part 2," p. 26.

In wet-pipe systems, the pipes are continually full of water. As soon as the sprinkler head opens, water is discharged. These are suitable for any area not subject to freezing. They should not be used in unheated attics or warehouses.

In a dry-pipe system, the pipes are full of pressurized air or nitrogen. When a fire causes the sprinkler heads to open, the air escapes, allowing water to flow into the pipes then onto the fire area. Many librarians and archivists see these as preferable to wet-pipe systems, because they do not retain water in the pipes where collections are stored. However, this supposed advantage is offset by other factors-especially their increased complexity, higher installation and maintenance cost, and slower response time.

A pre-action system is essentially a dry-pipe system equipped with fire detection. The pipes are filled with nitrogen, but the nitrogen is expelled and they fill with water as soon as detectors sense a fire. Water then flows only when the individual sprinkler heads are activated by heat (as in a wet-pipe system). These systems provide added security against accidental discharge, so they are generally used in critical storage areas such as archival vaults, rare book libraries, fine art storage rooms, and computer centers. However, they are more expensive than others to install and maintain, and their higher complexity increases the risk of malfunction.

As it happens, the most reliable option-the wet-pipe sprinkler system equipped with conventional sprinkler heads-is also the least expensive and the easiest to maintain.

Many archives, rare book libraries, and computer centers have used Halon, a gaseous fire extinguishing substance, to avoid the water damage associated with conventional sprinkler systems. Due to environmental concerns, the supply of Halon is now limited and prices have risen exorbitantly. As noted above, alternatives are now available. Consult with your local fire department for up-to-date information on their potential application in your repository.

A leading option now emerging is the "micromist" system, which discharges water in very fine droplets (under 20 microns in diameter) and high pressure. These systems give high-efficiency cooling and fire suppression with much less water than other sprinkler systems. It appears that micromist systems are an excellent replacement for Halon, especially because of the low volumes of water they employ. While a typical sprinkler uses 25-72 gallons of water per minute, micromist systems in test have extinguished library and archival fires with only 1 to 5 gallons of water.[19]

No matter what kind of suppression system you use, it must be tested regularly and fully. Consult with your fire department and sprinkler system vendor for guidelines.

Compact Shelving

An increasing number of libraries and archives have installed compact shelving for storage of collections, since this can add significant storage space. However, compact

[19] Artim, "Part 2," p. 27.

shelving increases the danger of damage to collections because the closed shelving holds heat and smoke inside (causing the fire to burn longer before being detected) and keeps water from suppression systems from reaching the fire. More sprinkler heads are needed to protect a compact shelving area than a conventional shelving area, and fire professionals recommend the installation of vertical metal sheeting every 2-3 bays to prevent the sideways movement of fire.

Staff Training

Your fire safety program can only be as strong as your staff expertise. The library or archives staff must be trained in protocols for notifying the Fire Department and in evacuation procedures (see Appendix I). They must be given live, hands-on training in how to operate fire extinguishers, and they need to understand how the sprinkler system operates and what responsibilities they have when it is activated.

An effective fire safety program is critical for every library and archives. No other disaster has such potential to completely destroy the collection. Wet materials can almost always be salvaged, but there is no way to reclaim the ashes that once were your books, journals, archives, and other collection materials.

Appendix J: Fire Safety Template

Liaison and Training

The _____ *[specify Recovery Coordinator or other position]* will meet at least quarterly with the Fire Marshal or appropriate other Fire Department staff to ensure coordination of plans and to identify areas of concern.

_____ *[specify frequency; annual or semi-annual is recommended]* training sessions will be conducted for Fire Department personnel to:

- suggest how they can minimize damage to collections during fire-fighting operations, and
- enhance their awareness and effectiveness when fighting fires in the library/archives.

As appropriate, Fire Department personnel may be included in disaster training sessions conducted for the library/archives staff.

Staff training sessions will be conducted on the following cycle:

- Alarms. All new staff will be informed about the operation of manual alarms and interpretation of annunciator panels. Refresher sessions for all staff will be conducted _____. *[Specify frequency; annual or semi-annual is recommended.]*
- Fire extinguisher operation. The _____ *[specify Recovery Coordinator or other position]* will arrange for the Fire Department (or other fire/safety personnel) to conduct live, hands-on training sessions for all staff _____ *[specify annual or other frequency]*. The session will include use of all the types of extinguishers we use in the building(s). *[Be aware that you must arrange for prompt recharging of extinguishers immediately following these sessions.]*

Detectors

The building or buildings uses the following types of detectors in the specified locations: *[List each type of detector present in the building(s), and indicate which room(s), floor(s), or other areas each is in.]*

Type	Location(s)
_____	_____
	_____

The _____ *[specify Fire Department or other responsible unit]* will inspect all detectors _____ *[specify frequency]*. These inspections will not only verify that each detector is present in its location, but also that its power source is valid (e.g., that batteries are operative) and that it is functioning at optimal sensitivity.

Portable Extinguishers

The building uses the following types of fire extinguishers in the specified locations: *[List each type of extinguisher present in the building(s), and indicate which room(s), floor(s), or other areas each is in.]*

Type	Location(s)

The _____ *[specify Fire Department or other responsible unit]* will inspect all fire extinguishers _____ *[specify frequency]*. These inspections will not only verify that each extinguisher is present in its location, but also will ascertain the pressure, volume, etc.

Inspectors will use the Fire Extinguisher Inspection Log (see copy in Appendix L, Forms) and submit a copy to the _____ *[specify Operations Manager, Recovery Coordinator, or appropriate other position]*.

In case a dry-chemical ABC extinguisher is discharged, prompt clean-up is essential, because the chemical (monoammonium phosphate) used in these extinguishers is highly corrosive. The _____ *[specify Recovery Coordinator or other position]* and disaster team will be activated immediately for clean-up. The following clean-up procedures will be used: *[Consult with your Fire Department to develop effective procedures.]*

Fire Suppression

The building uses the following type or types of fire suppression system: _____. In the event of a fire, the suppression system will operate as follows: *[Provide a simple description of how the system operates (perhaps drawn from the "Background Information" section of this appendix), what response the Fire Department will make, etc.]*

When the sprinklers/suppression system discharges during working hours, staff will take the following actions: *[Develop procedures in consultation with your fire department and other safety officers.]*

Appendix K: Floor Plans

v

Appendix K: Floor Plans

Insert floor plans that may be useful in a disaster situation. Even if Public Works or some other department has an official set of drawings and blueprints, it is generally prudent for the head librarian or archivist to have a set on hand within the repository. Remember to draw them simply, so that non-technical staff can use them successfully. Separate floor plans might be included, and it is useful also to provide natural-language descriptions of each of these.

A. Building Layout

Provide a simple floor plan that shows rooms (with their correct room numbers), aisles, exits and entrances, and windows. Highlight primary evacuation routes, perhaps in red.

B. Salvage Priorities

The attached floor plans identify materials that should be protected, removed, or salvaged first in the event of a disaster. Use these plans along with the "Salvage Priorities" section and Appendix P.

Insert Salvage Priorities floor plan here. Be sure the Fire Department has a copy of these plans, for they may be able to give special protection to your high-priority collections during fire-fighting operations.

C. Collection Locations

Insert floor plan(s) showing collection storage areas, with salvage priorities noted on it, followed by the following information:

Floor/Room Area	Description of Materials	Collection Specialist	Salvage Priority

D. Fire Safety

Insert floor plans showing locations of the following: extinguishers, fire alarms, sprinklers, detectors, annunciator panel(s).

E. Engineering and Mechanical Controls

Insert floor plans showing locations of engineering and mechanical controls such as shut-offs and master switches for gas, electricity (including fuses and circuit breakers), water, heating and air-conditioning system(s), and elevator.

F. Hazardous Materials

Insert floor plans showing locations of known hazards such as chemicals and other hazardous or toxic materials (including those that may be in janitorial closets, conservation laboratory, photography shop, or photoduplication department). Be sure that all hazardous materials listed in Appendix E, CBR Hazards, are reflected in this floor plan.

Appendix L: Forms

Appendix L: Forms

Place in this section copies of forms you may need in a disaster. Useful forms might include:

- *inspection checklists,*
- *inventory forms,*
- *medical/emergency information forms for staff and volunteers,*
- *packing lists,*
- *requisitions,*
- *purchase orders, and*
- *time-keeping forms for staff and volunteers.*

Two sample forms-a Fire Extinguisher Inspection Log and a Packout Form-are reproduced here. If you retain them in your disaster plan, modify them for your situation.

Fire Extinguisher Inspection Log

Inspection Date: _____

Location	Extinguisher Type	OK?	Action Needed

Packout Form

A form like this may be used in a salvage operation to create a list of boxes removed from a disaster site. Adapt this model to suit your needs. Multiple copies of the packout form should be stored with your disaster stockpile, since you may not have ready access to a photocopier when collection materials are damaged.

Box #	Storage Location	Contents	Format	# of Units	Damage	Salvage Priority	Destination
	[area from which collections are removed -- e.g., 2nd floor, Buchanan Room, etc.]	*[range of call numbers, archival series, etc.]*	*[e.g., books, journals, archives, manu-scripts, etc.]*	*[e.g., number of volumes, folders, items, etc.]*	*[e.g., wet, damp, or dry; smoke or soot; mold; etc.]*	*[e.g., #1, #2, or #3; A, B, or C; etc.]*	*[area to which box should be transferred -- e.g., freezer, air-drying, freeze-dryer, etc.]*

Appendix M: Inspection Checklist

Background Information for Appendix M: Inspection Checklist

The inspection checklist is designed to be used as part of a comprehensive disaster preparedness program. Staff can conduct periodic inspections and information-gathering activities to reduce the repository's vulnerability to disaster. Some information will be gathered in regular tours of the building, while much will be provided by others in the organization.

The information gathered will be used primarily in two ways:

- Some conditions will be found that require repair, replacement, or other maintenance activity. For example, if drains are not flowing freely from the roof, a simple cleaning will remedy that condition. Or if fire extinguishers are missing from a critical area, they may be purchased and installed.

- Some conditions are not easily remediable, but their existence will alert the staff to vulnerabilities that must be considered in the disaster plan. For example, if there is no automatic fire suppression capability, it may not be immediately installed, but the vulnerability should signal the disaster preparedness team to develop other strategies that will reduce the risk of fire. Similarly, if the roof is unsound but no replacement is imminent, the disaster team probably should prepare for regular roof leaks.

In general, the repository should create its own checklists based on the frequency with which each item needs to be checked. Some will need attention only once-for example, determining geographic or weather-related hazards, identifying the type of roof, and so on. Others will only require annual or semi-annual attention, as is the case with furnace and boiler inspections. Others will merit monthly or quarterly action, such as fire extinguisher inspections and examination of the plumbing.

Many of the inspections outlined here are likely to be the duty of facilities maintenance, rather than library or archives personnel. Work with that staff to develop a reasonable schedule for the inspections, mechanisms to verify that inspections are done on schedule, and procedures that ensure you will be informed of remedial actions that are needed. Those areas not included in inspections by maintenance staff should be assigned to staff in the repository. One individual should keep copies of the completed checklists and track progress in completing repairs and other actions noted on the forms. This may be done by the administrator responsible for the building or by the chair of the disaster preparedness committee.

In most cases, staff will require some education and training before they can carry out the inspection program. A bibliography of readings (see Appendix T) will provide a

good starting point. Training programs on disaster preparedness are offered by organizations throughout the country, several of which are listed in the "National Suppliers and Service Providers: Resource List" in Appendix B2.

Appendix M: Inspection Checklist

The Prevention/Protection Plan in the body of the workbook notes when, by whom, and how inspections are done. Keep a clean master of this checklist in this appendix. Also retain copies of completed inspection reports in the disaster plan or other designated location.

General Preparedness	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Disaster plan written/updated			
Emergency instructions posted at all staff phones			
Disaster supply kit(s) created and inventoried on schedule			
All shut-off valves, breaker switches, etc. clearly labeled			
Staff have keys to mechanical rooms and janitorial closets			
Tape for windows			

Site/Area Hazards	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Flood plain vulnerability			
Nearby rivers, creeks, oceans, lakes, arroyos, etc.			
Tornado incidence			
Hurricane threat			
Earthquake fault line			
Wildfire threat			
Railroad tracks nearby			
Interstates or major roadways nearby			
Airport flight paths identified			
Nuclear power station nearby			

Building & Grounds	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Railings, benches, planters, light poles, flag-poles, etc. well anchored			
Overhanging trees and branches trimmed			
No sign of cracks or seepage visible in exterior or interior walls			
Compliance with seismic, fire, electrical, and other codes			
Asbestos, PCBs, etc. identified			
Adequate connections between roof/walls/floors (to protect against wind damage)			
Flammable vegetation removed from a 30-foot perimeter around building *(wildfire control)*			
Leaves, twigs, and limbs removed from grounds *(wildfire control)*			

Roof and Drainage (including eaves, gutters, downspouts, scuppers, drains, interior columns)	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Roof inspections conducted regularly			
Roof covering sound. No buckling, bubbles, leaks, cracks, standing water			
Flashing and/or caulking intact			
Equipment on roof prohibited or (if present) properly anchored			
Drains connected into sewer system			
Water directed away from building footings			
Drains clear			
Gutters cleaned			
Effective drainage around doors			
Leaves, pine needles, and other combustible material removed from roof			

Plumbing	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Pipes and plumbing well supported			
Pipes/plumbing free of leaks			
Staff know location of water main and have appropriate tools (if needed) for shut-off			
Staff know whom to contact (workday and after-hours) for water main shut-off. List names and phone numbers.			
Backflow valves installed			
Local shut offs			

Windows and Skylights	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Window frames and sills in good condition			
Caulking and window seals sound			
No cracked or broken windows			
Hurricane shutters and/or boards (if applicable) prepared and labeled			
Double-pane windows *(in areas prone to wildfires)*			
Tape for Windows			
Window locks secured			

Fire Safety	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Fire-resistant structure			
Concrete flooring; no air passages between floors			
Concealed spaces (e.g., false ceilings) identified			
Fire detection in all concealed spaces			
Stairways and pipe shafts enclosed			
Electrical wiring in good condition			
Appliance cords in good condition			
Appliances turned off/unplugged nightly			
Before wildfire season . . .			
• flammable vegetation cleared away 30 feet from building			
• pine needles, leaves, and other debris removed from roof			
Regular Fire Marshall visits			
Fire Marshall visits used productively (e.g., floor plans given to Fire Department; high-priority collection areas noted; appropriate follow-up on observed Code violations)			

(Fire Safety, continued)	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Fire detection…			
• appropriate type(s) present			
• wired to 24-hour monitoring station			
• tested regularly			
Appropriate extinguishers present, inspected appropriately and on schedule			
Automatic suppression system (e.g., sprinklers) present and operating			
Suppression system tested according to manufacturer's recommendations			
Fire drill conducted twice per year			
Staff trained in . . .			
• sounding alarms			
• interpreting annunciator panels (if present)			
• notifying Fire Department and others as called for			
• using extinguishers			
• turning off power, HVAC, sprinklers, gas main			
• closing fire doors			
• overseeing evacuation			

Heating, Ventilation, and Air-Conditioning (HVAC) System	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Automatic shut-off capacity in case of fire			
Furnace/boiler inspected each fall			
Air conditioning:			
• free of leaks			
• free of mold/algae			
• effective drainage from condensation-collecting pans			
• dehumidification capacity			
• capable of operating on exhaust to reduce smoke			
Smoke detectors present in ductwork			

Stack Areas	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Shelves well braced[20]			
Shelves braced to California seismic codes *(in earthquake-prone locations)*			
Compact shelving inspected and maintained			
Books shelved snugly, bookends properly used			
Shelving 4-6" off floor			
No materials stored on floor			
"Canopies" atop shelving to deflect water			
No valuable materials in basement			
Exits unobstructed			
High-priority collections away from windows			
Collection priorities clearly marked			
Transport cases located nearby			
Insect and animal activity monitored			

[20] Even in areas not subject to earthquakes, shelving should be braced to earthquake standards. Strong bracing can guard against shelving collapse and, in the event of a fire, can enable units to withstand the significant water pressure from fire hoses.

Protection from Water Damage	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
No water sources (pipes/plumbing, ice machines, etc.) located above collections			
Water detectors present and wired to monitoring station			
Storage areas checked daily for leaks, seepage, etc, water alarm installed wherever possible.			
Sump pumps and backups present			
Appropriate dehumidifiers available			
No leakage or seepage through walls			
Valuable materials stored above ground level			
Valuable and fragile media stored in protective enclosures			
Foundation floodproofed			

Security	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Building exterior well lighted			
Light bulbs replaced as needed			
Locks and alarms on all windows and doors			
Intrusion detectors and alarms present and monitored 24 hours per day			
Motion detectors walk-tested daily			
CCTV installed and tested routinely			
Ground-level windows secured			
No glass in or near ground-level doors			
Limited number of staff with master keys			
Locks re-keyed and vault combinations changed regularly			
Keys collected from staff upon termination			
Effective closing procedures to ensure building is vacant, equipment is turned off, and exhibit cases are locked.			
Book drops (if any) located apart from building or in fire-resistant enclosure			
Keys to storage cases and cabinets kept in locked key cabinet			

Access to key cabinet limited to curatorial staff			
There are written procedures for removing objects from exhibit cases			
Objects on exhibit are inventoried routinely			
Exhibit cases are structurally sound and well-anchored to the wall			
Staff trained in security procedures			

Housekeeping	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Cleaning supplies and other flammable materials stored safely			
Chemicals stored in OSHA-approved cabinets			
Trash removed nightly from the building			
Staff room cleaned daily and well			
Food and drink policies and procedures are enforced			
Effective pest management strategies in place			

Insurance[21]	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Policy reviewed and updated annually			
"Acts of God" covered			
Replacement costs specified as needed			
Photographs taken to document normal condition of building (interior and exterior), storage areas, collections			
Staff aware of records required for claim, and those records maintained safely			
Duplicate collection records (shelflist, catalog, inventory, and/or back-up computer tapes) for entire collection stored off-site			
Duplicate by filming/electronic means personnel, financial and administrative records.			
Insurance records stored off-site			

[21] Most Navy libraries are self-insured. The following are relevant only if the institution has commercial insurance on all or selected parts of the collection. Otherwise, consult your risk manager regarding types of documentation required and other provisions of the self-insurance program.

Construction Projects	**Yes** **No** **NA**	**Needs Action** (Describe)	**Action Complete** (Date & Initial)
Responsibility for fire safety precautions clearly specified in contract			
Fire guards used in all cutting and welding operations			
Debris removed nightly			
Fire-resistant partitions used			
Extra fire extinguishers on hand			
Construction equipment secured and locked each evening			
Two hour fire watch posted at the end of each work session			

Appendix N: Insurance

Appendix N: Insurance

As part of your planning, determine whether your installation or organization is self-insured or has commercial insurance. Most Navy libraries are self-insured. Commercial insurance, if any, is generally provided only for items of exceptionally high value or rarity and for those on loan to the repository (e.g., for use in an exhibition). In this section, outline procedures mandated for coverage under your risk management program. Also record the basic information about commercial insurance coverage (if any), and attach a copy of the policy or note its location.

Self-Insurance

Risk Manager:_____

Phone: _____ After-hours Phone: _____

Description of coverage: [*Provide a non-technical description of the coverage. Explain what is covered, procedures to follow, types of documentation required, what kinds of resources are provided for salvage operations or replacement, and attach a copy of any necessary documentation.]*

_____

_____

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_____

Commercial Insurance

Insurance Company: _____

Insurance Agent: _____

Phone: _____ After-hours Phone: _____

Policy Number: _____

Location of Policy: _____

[Note where the policy is kept, or attach a copy of the policy, claim forms, and other critical documentation.]

National Office: _____

Phone: _____

Contact: _____

Insurance Adjuster: _____

Phone: _____

Description of coverage: *[Provide a non-technical description of the coverage. Explain what is covered, the amount of the deductible, procedures for initiating a claim, types of visual or written documentation required to document a claim, and what kinds of coverage is provided for salvage operations or replacement.]*

_____

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Appendix O: Operations Center

Appendix O: Emergency Operations Center

Identify the spaces you could use for recovery operations. Offices and operational spaces in which you could manage the recovery effort will need to have desks, phones, and other basic equipment. You will also need space for rinsing, air-drying, and other salvage activities. During the planning process, identify some areas within your building and elsewhere on your installation. Also identify some off-site spaces you could use if the repository were significantly damaged. Outline the procedures you would use to transfer office equipment and supplies, as well as telephone, electricity, and other utilities and services to spaces that do not have them already.

Most emergencies will not entail significant damage to the building, so recovery operations can be executed on-site. The _____'s *[specify Operations Manager, Recovery Coordinator, or other appropriate position]* office will be the operations center in that case, with most functions being directed and coordinated from that office.

On-Site Space

If additional workspace is required for rinsing/cleaning, air-drying, and other salvage procedures, the following areas may be suitable: *[Specify areas in your building where there is adequate and appropriate space, equipment, climate control, and security for such functions.]*

Area/Room	Contact	Phone (Office/After-Hours)

Off-Site Space

When the building has sustained significant damage, off-site spaces may be required. It is useful to identify potential areas in advance. Consider facilities such as:

- *public buildings such as armories and schools;*
- *private meeting facilities such as those of veterans groups, Elks, Girl/Boy Scouts, etc.;*
- *church activity buildings;*
- *commercial property that is for rent or lease; and*
- *rented tents, trailer homes (such as used on construction sites), and other properties.*

If *off-site* space is required, the following facilities may be used:

Space/Address	Contact	Phone (Office/After-Hours)

The _____ *[specify Operations Manager, Recovery Coordinator, or other appropriate position]* is authorized to approve the use of *off-site* space. The procedure for using off-site space is as follows: *[Describe the procedure, who is to have keys to the site, what security measures will be used, etc.]*

_____

_____

_____

_____

_____

_____

_____

_____

If equipment, supplies, and utilities (e.g., telephone, electricity) must be provided in the operations center, they will be handled as follows: *[Describe your plans for providing phone service, electricity, climate control, security, etc. if those are not available in the off-site facility. Also note how you will transfer to the site any office equipment such as photocopiers, desks, PCs, and fax machines, as well as recovery supplies that are not available there.]*

Information Technology Operations

Plans for *off-site* operation of information technology functions are detailed in Appendix G, Protecting Information Technology.

Appendix P: Salvage Priorities-Detailed

Background Information for Appendix P: Salvage Priorities-Detailed

Record your detailed list of collection salvage priorities-by room, floor, department (History, Literature, Mathematics, Reference, Special Collections, etc.), or other unit-in this appendix. Develop priorities not only for materials in the stacks, but also for collections and working tools in office areas. Be sure to include items in the building on loan (e.g., for exhibition) and materials brought in on approval or for appraisal.

Create a separate sheet for each department or other unit. The body of the plan should provide your collection- or organization-wide priorities. If you wish also to establish salvage priorities for computer equipment, photocopiers, audiovisual equipment, and so on, do so in a separate worksheet.

Appendix P: Salvage Priorities-Detailed

Department/Area: _____

Priority	Materials *[specify call number range, record group, item, etc.]*	Location	Staff Specialist[22]
1			
2			
3			

[22] Specify the person who is most familiar with the materials- may be a bibliographer, curator, archivist, records analyst, the creator of the files, etc.

Appendix Q: Salvage Procedures

Background Information for Appendix Q: Salvage Procedures

Insert detailed instructions for packing, rinsing, freezing, drying, and other salvage procedures that relate to the formats in your collection (papers, bound volumes, photographic materials, maps, drawings, etc.). A few leaflets and instructions are provided in Appendices Q1 through Q5 for your reference. The bibliography in Appendix T lists other works, many of which have sections you might want to copy and insert in this appendix.

Appendix Q1: Drying Wet Books and Records

There are currently five ways to dry wet books and records. All have undergone at least minimal testing under emergency conditions; several have been used extensively. These are described to assist you in making the best choice given your circumstances: cause of damage, level of damage, number of items involved, rarity/scarcity, personnel available, budget available, and drying service available. Advice from a conservator or preservation administrator experienced in disaster recovery can be helpful before making the final selection(s). Successful recovery operations have proven that it is less expensive to dry original collections than to replace them, even if they are replaceable.

It is important to understand that no drying method restores materials. They will never be in better condition than they were when drying began. If time must be taken to make critical decisions, books and records should be frozen to reduce physical distortion and the risk of mold.

Air-Drying

Air-drying is the oldest and most common method of dealing with wet books and records. It can be employed for one item or many, *but is most suitable for small numbers of damp or slightly wet books and documents*. Because it requires no special equipment, it is often believed to be an inexpensive method of drying. However, it is extremely labor-intensive, it can occupy a great deal of space, and it can result in badly distorted bindings and text blocks. It is seldom successful for drying bound volumes on coated paper. Book and paper conservators should always be consulted for the drying of rare or unique materials. They may choose to air-dry items or may suggest one of the other alternatives.

Dehumidification

This is the newest method to gain credibility in the library and archival world, although it has been used for many years to dry out buildings and the holds of ships. Large commercial dehumidifiers are brought into the facility with all collections, equipment, and furnishings left in place. Temperature and humidity can be carefully controlled to specifications. Additional testing is being undertaken, but the technique is certainly successful for damp or moderately wet books, even those with coated paper, as long as the process is initiated before swelling and adhesion have taken place. The number of items that can be treated with dehumidification is limited only by the amount of equipment available and the expertise of the equipment operators. This method has the advantage of leaving the materials in place on the shelves and in storage boxes, eliminating the costly, time-consuming step of moving them to a freezer or vacuum chamber.

Freezer Drying

Books and records that are only damp or moderately wet may be dried successfully in a self-defrosting blast freezer if left there long enough. Materials should be placed in the freezer as soon as possible after becoming wet. Books will dry best if their bindings are supported firmly to inhibit initial swelling, e.g., sandwiched between boards and secured with an ace bandage. The equipment should have the capacity to freeze very quickly, and temperatures must be below -10°F to reduce distortion and to facilitate drying. Documents may be placed in the freezer in stacks or may be spread out for faster drying. Expect this method to take from several weeks to several months, depending upon the temperature of the freezer and the extent of the water damage. However, caution is advised: with this method, leaves of coated paper may adhere to one another.

Vacuum Thermal Drying

Books and records may be dried in a vacuum thermal drying chamber into which they are placed either wet or frozen. The vacuum is drawn, and heat is introduced. Drying typically occurs at temperatures above 100°F, but always above 32°F. This means that the materials stay wet while they dry. It is an acceptable manner of drying wet records, but often produces extreme distortion in books, and almost always causes blocking (adhesion) of coated paper. For large quantities of materials, it is easier than air-drying and almost always more cost-effective. However, extensive rebinding or recasing of books should be expected. This method is a solution for materials that have suffered extensive water damage. Given the elevated temperature used in drying, it is most appropriate for materials with short-term (under 100 years) value.

Vacuum Freeze-Drying

This process calls for very sophisticated equipment and is especially suitable for large numbers of very wet books and records as well as for coated paper. Books and records must be frozen, then placed in a vacuum chamber. The vacuum is pulled, a source of heat introduced, and the collections, dried *at temperatures below 32°F*, remain frozen. The physical process known as sublimation takes place; that is, ice crystals vaporize without melting. This means that there is no additional swelling or distortion beyond that incurred before the materials were placed in the chamber.

Many coated papers can be difficult to dry without sticking together once they are wet. Because it is nearly impossible to determine which papers will block, all coated papers should be treated the same way for the purpose of vacuum freeze-drying: before any drying takes place, and ideally within six hours of becoming wet, materials should be frozen at -10°F or lower. Then they may be vacuum freeze-dried with a high potential for success. Rare and unique materials can be dried successfully by vacuum freeze-drying, but leathers and vellums may not survive.

Photographs should not be dried this way unless no other possibility exists. Consult a photograph conservator.

Although this method may initially appear to be more expensive because of the equipment required, the results are often so satisfactory that additional funds for rebinding are not necessary, and mud, dirt, and/or soot is lifted to the surface, making cleaning less time-consuming. If only a few books are dried, vacuum freeze-drying can indeed be expensive. However, companies that offer this service are often willing to dry one client's small group of books with another client's larger group, thus reducing the per-book cost and making the process affordable.

How to Air-Dry Wet Records

Wet records may be air-dried if care is taken to follow guidelines suggested by preservation experts. The technique is most suitable for small numbers of records that are damp or water-damaged only around the edges. If there are hundreds of single pages, or if the water damage is severe, other methods of drying will be more satisfactory and cost effective. Stacks of documents on coated or shiny paper must be separated immediately to prevent adhesion, or they must be frozen to await a later drying decision. Care must be taken with water-soluble inks as well. Records with running or blurred inks should be frozen immediately to preserve the written record. After the items are dry, conservators can be contacted for advice and assistance.

If records must be air-dried, the following steps will help achieve satisfactory results. Wet paper is extremely fragile and easily torn or damaged, so care must be exercised. Once wet, records will never look the same, and at least some cockling or distortion should be expected.

1. Secure a clean, dry environment where the temperature and humidity are as low as possible. The temperature must be below 70°F and the humidity below 50%, or mold will probably develop and distortion will be extreme.

2. Keep the air moving at all times using fans in the drying area. This will accelerate the drying process and discourage the growth of mold. If materials are dried outdoors, remember that prolonged exposure to direct sunlight may fade inks and accelerate the aging of paper. Be aware that breezes can blow away single records. Train fans into the air and away from the drying records.

3. Single leaves can be laid out on tables, floors, and other flat surfaces protected if necessary by paper towels or clean, uninked newsprint. Alternatively, clotheslines may be strung close together (6-foot lengths spaced ½-inch to 1-inch apart) and lightweight records, manuscripts, photographs, and pamphlets laid across them or clothespinned to them for drying. Be sure to maintain the order of files and their contents.

4. If records are printed on coated paper, they must be separated from one another to prevent them from sticking together. This is a tedious process, which requires skill and patience. Practice ahead of time will prove useful. Place a piece of polyester film (such as Mylar) on the stack of records. Rub it gently down on the top document. Then slowly lift the film while at the same time peeling off the top sheet. Hang the polyester film up to dry on the clothesline using clothespins. As the document dries, it will separate from the surface of the film. When this starts to happen, remove it and allow it to finish drying on a flat surface.

5. Once dry, records may be rehoused in clean folders and boxes. Or they may be photocopied or reformatted onto microfilm. Dried records will always occupy more space than ones that have not been water damaged.

How to Air-Dry Bound Volumes

Air-drying is most appropriate for books that are only damp or wet in places, such as along the edges. Books that are soaking wet should be vacuum freeze-dried to minimize cockling of leaves and distortion of bindings. Books containing coated paper should be frozen while still wet and vacuum freeze-dried. Books with running or blurred inks should be frozen immediately, then vacuum freeze-dried.

1. Refer to steps 1 and 2 of the previous section.

2. Volumes can be dried on any flat surface, but tables make far easier work. Cover the tables with plastic or uninked newsprint.

3. Interleave at least every 50 pages, starting from the back of the volume. Turn pages carefully to avoid tearing them. For interleaving, use paper towels or clean, uninked newsprint. Be careful not to interleave too much, or the spine will become concave and the volume distorted. Complete the interleaving by placing clean blotter paper inside the front and back covers. Stand the volume on its head, fan it open, and place it on several sheets of absorbent paper. Change the interleaving frequently. Turn the volume over each time it is interleaved. Note that interleaving is not necessary if the book is just damp.

4. When volumes are dry but still cool to the touch, they should be closed and laid flat on a table or other horizontal surface, gently formed into the normal shape, with convex spine and concave front edge (if that was their original shape) and held in place with a light weight. *Do not stack* drying volumes on top of each other. In no case should they be returned to shelves until thoroughly dry; otherwise mold may develop, particularly along the inner margins.

5. Dampness will persist for some time in the inner margins, along the spine, and between boards and flyleaves. You may use a moisture meter to determine whether the paper is dry. Normal dry paper generally has about 7% moisture content. Check often for mold growth while books are drying.

6. If the edges are only slightly wet, interleaving is not required. Stand the volume on end and fan it open slightly in the path of a flow of air (as from a fan). To minimize distortion of the edges, lay volumes flat under light pressure (e.g., a book press or paper-covered bricks) just before drying is complete.

7. If you can establish an air-conditioned room capable of maintaining a constant relative humidity of 25 to 35% and temperatures between 50 and 65°F, books with only wet edges can be dried successfully in approximately 2 weeks without interleaving. *Do not try to dry books printed on coated paper by this method*. In most cases, the only chance of saving such books is to freeze them while wet and dry them by vacuum freeze-drying.

Sally Buchanan: 6/94
Rvsd. Lisa Fox: 12/97, Beth Patkus 3/06

Appendix Q2: Emergency Salvage of Photographs

Because of the number of photographic processes and their wide variety, responsible advice for the emergency salvage of wet photographs is difficult to provide. Some processes can withstand immersion in water for a day or more, whereas others would be permanently disfigured or even destroyed by a couple of minutes of exposure. In general, wet photographs should be air-dried or frozen as quickly as possible. Once they are stabilized by either of these methods, there is time to decide what course of action to pursue.

Ideally, salvage should occur under a conservator's supervision. A conservator can minimize damage to a collection if he or she can direct the salvage and treat the collection immediately after the damage has occurred. Time is of the essence: the longer the period of time between the emergency and salvage, the greater amount of permanent damage that will occur.

Minimum Immersion Time

Photographs in water will quickly deteriorate: images can separate from mounts, emulsions can dissolve or stick together, and staining can occur. Mold can grow within 48 hours at 60% RH and 70°F, and it often causes permanent staining and other damage to photographs. For these reasons photographs need to be dried as quickly as possible. If photographs cannot be dried promptly, they should be frozen.

Salvage Priorities for Wet Photographs

- In general, films (plastic-base materials) appear to be more stable than prints (paper-base materials); therefore, prints should be salvaged first. Important exceptions include deteriorated nitrate and safety films, which are extremely susceptible to water damage.

- Some photographic processes will not survive immersion. Photographs made by the following processes should be salvaged first:
  - ambrotypes
  - tintypes
  - collodion wet plate negatives
  - gelatin dry plate negatives
  - lantern slides
  - deteriorated nitrate or safety film
  - autochromes
  - carbon prints
  - woodburytypes
  - deteriorated or unhardened gelatin prints
  - color materials

- Photographs that are more stable in water include:
  - daguerreotypes

- salted paper prints
- albumen prints
- collodion prints
- platinum prints
- cyanotypes

Air-Drying Photographs

- If personnel, space, and time are available, photographs can be air-dried.
- Separate photographs from their enclosures, frames, and from each other. If they are stuck together or adhered to glass, set them aside for freezing and consultation with a conservator.
- Allow excess water to drain off the photographs.
- Spread the photographs out to dry, face up, laying them flat on an absorbent material such as blotters, uninked newsprint, paper towels, or a clean cloth.
- Keep the air around the drying materials moving at all times. Fans will speed up the drying process and minimize the risk of mold growth.
- Negatives should be dried vertically. They can be hung on a line with plastic clips placed at the edges.
- Photographs may curl during drying. They can be flattened later.

Freezing Photographs

- If immediate air-drying of photographs is not possible or if photographs are stuck together, freeze them.
- Place the photographs in small plastic bags before freezing, several to a bag.
- If possible, interleave or wrap individual photographs or groups of photographs before freezing with a non-woven polyester material or waxed paper. This will make them easier to separate when they are eventually treated.

Drying Frozen Photographs

- Frozen photographs are best dried by thawing, followed by air-drying. As a group of photographs thaws, individual photographs can be carefully peeled from the group and placed face up on a clean, absorbent surface to air-dry.

- Vacuum thermal drying, where the frozen material is thawed and dried in a vacuum, is not recommended for photographs. Gelatin photographs undergoing this procedure have a tendency to mottle severely and stick together.

- Photographs can be vacuum freeze-dried; in this process, no thawing occurs. Gelatin photographs may mottle during the procedure, but they will not stick together.

- Wet collodion glass plates must **never** be freeze-dried; they will not survive. This is also true for all similar collodion processes such as ambrotypes, collodion lantern slides, and tintypes.

Salvaging Slides

- Slides can be rinsed and dipped in a water/Photo-flo® mixture, slide cleaner, or a similar commercial product and air-dried, preferably hung on a line or propped on edge.

- Ideally, slides should be removed from their frames for drying and then remounted.

- Slides mounted between glass must be removed from the glass, or they will not dry.

Call a Qualified Conservator

Dried or frozen photographs are reasonably stable. Store them until you can talk to a conservator who has experience with photographs and can advise you of treatment needs.

Northeast Document Conservation Center: 1999

Appendix Q3: Salvage Procedures: Microforms

Microforms subject to water damage should be professionally cleaned and dried within 48-60 hours. Generally this involves the use of a service bureau that will rewash, process, and dry the film. In most cases, the film should not be used again. Instead, make a duplicate copy and discard the damaged one. Both Fuji and Kodak offer reprocessing services for their films (see listings in Appendix B2). Coordinate microfilm salvage with service bureaus and processing laboratories.

Salvage Priority

1. Color microforms are most vulnerable. If the film is important, it should receive high-priority attention.
2. Silver-gelatin and other emulsion film, while relatively stable, should generally be salvaged next.
3. Diazo and vesicular films are most stable and should generally be salvaged last.

Procedures for Roll Microfilm

If the film is a duplicate and replacements are readily available, do not attempt salvage. If salvage is required, follow these steps:

1. Fasten a rubber band around the box so the box, label, and roll will remain together.

2. If the film is dirty/muddy, put in a 5-gallon bucket filled with clean, cold water. Agitate gently to remove major dirt deposits.

3. Drain off water. Replace with fresh water that is clean (preferably distilled) and cool until ready for packing.

4. Observe the film brand identification on top of each film carton. Kodak film can be packed for delivery to Eastman Kodak Company, and Fuji Film can be packed for delivery to Fuji Film Company, since both provide no-cost salvage of their film. (See Suppliers and Service Providers, Appendix B2.) Other brands of film may be sent to various film processing labs.

5. Pack wet or damp reels of film in boxes lined with three layers of heavy duty plastic garbage bags (10-gallon size). Fasten each plastic bag separately and seal all boxes, marking them "WET FILM FOR REWASHING & DRYING." Each box may contain 40-50 reels of 35mm film (about 80-100 reels of 16mm film) with a maximum weight of 35 pounds.

6. Prepare and enclose a packing list in the container, and retain a copy of it.

7. Arrange for shipping via Federal Express, UPS, or other carrier, and be sure the service bureaus know to expect receipt.

Procedures for Microfiche

If the fiche is a duplicate and replacements are readily available, do not attempt salvage. If salvage is required, follow these steps:

1. Keep the fiche in clean, cool water until ready to salvage.

2. Set up small buckets, shallow dish pans, or photo trays with clean, cool water.

3. Dip the fiche in the series of water baths to rinse off dirt, mud, or other debris.

4. Hang individual microfiche sheets on clothesline to dry. Be sure clothespin is attached to edge of sheet and does not contact the image area.

Freezing

If film cannot be salvaged within about 60 hours, it can be frozen.

Appendix Q4: Salvage Procedures: Computer Media

The best procedure for salvaging computer media is to use your backups to recreate whatever data and files were lost. If you attempt salvage techniques described here, never put the salvaged media in one of your newer or better machines, as it could damage the equipment. If in doubt, always consult a data recovery specialist. Appendix B2, Suppliers and Service Providers, lists some of those companies.

CD-ROM and Optical Disk

1. Rinse in cool, clean water.

2. Dry with a very soft, non-abrasive sponge. To accelerate drying, use a blow dryer turned to the "cool" setting.

Hard Drives and Magnetic Tapes

To the extent possible, use backups stored *off-site*. If salvage is required, contact specialized companies listed in Appendix B2, Suppliers and Service Providers.

Diskettes

The objective in salvaging diskettes is not to save the diskettes themselves, but to allow you to copy data from a wet disk to a new one.

1. Remove the disk from its plastic casing.

    a. 3½" diskette: Gently pry up the metal "door" and remove the diskette inside. A spring will be visible, and it needs to be removed. (It comes out easily as it is held in place by the metal "door.") The plastic disk will now be visible. Using a microspatula or thin screwdriver, slide the end in slightly so as not to touch the magnetic medium, and pry open each end to break the plastic seal that holds the two sides together.

    b. 5¼" diskette: Use scissors to cut off the very edge of the diskette housing so that you create an opening on the edge of the diskette that faces outward when it is in the disk drive.

2. Reach in (using clean hands or lint-free gloves) and gently remove the magnetic medium.

3. Gently rinse the magnetic medium in clean, cool water. (Several rinses may be required if the disk was in dirty water.) Wipe with a lint-free cloth.

4. Open a new diskette, using the procedures outlined in step 1. Remove the magnetic disk from within the casing. Place the salvaged magnetic medium into the new case. When salvaging 3½" diskettes, you do not need to reattach the metal "door" or spring, but be sure the plastic fits snugly together so it does not get jammed in your disk drive.

5. Insert the disk into the floppy drive of a PC. It is a good idea to use an older PC, in case the disk still has some dust or other defects that could damage the disk drive.

6. Copy the damaged disk onto a new diskette.

7. Remove the salvaged magnetic medium and discard it. You can then continue using the diskette housing for additional salvaged diskettes.

Appendix Q5: Salvage Procedures: Artifacts and Museum Objects

Before salvaging fine art materials, identify the media of the materials to select the appropriate treatment. This section includes instructions for salvaging the following media:

- works of art on paper
- paintings
- animal materials: bone, hair, horn, ivory, shell
- animal skins:
  - buckskin and other flexible leathers
  - leather and rawhide
  - parchment and vellum
- basketry
- ceramics, glass, and stone
- furniture
- metal
- natural history specimens
- textiles
- wood

Works of Art on Paper

The following procedures are appropriate for framed or matted items that are damp, but in generally sound condition. They must be frozen or dried within 48 hours.

1. Preparation for drying

   a. Place frame face-down on smooth, flat surface covered with blotting paper or bubble pack where necessary.

   b. For wood frames, carefully remove hanging hardware, dust seal, nails, glaziers points or brackets, and backing boards not attached to mat.

   c. For metal frames, carefully remove corner hardware, hanging hardware, and backing boards not attached to mat.

   d. Ensure that work of art has not adhered to rabbet of frame, spacer, or glazing. For work of art that is framed, matted, and wet, use a screening support behind the back mat; then lift the entire unit (glazing, mat, and support) from the frame and lay it face up on a smooth, flat surface. Carefully remove the glazing, first ensuring that it has

not adhered to the work of art. For a framed and unmatted work, the glazing and the work of art should be carefully removed together and laid face down on a smooth, flat surface. Apply blotting paper to the back to absorb excess moisture. It may be possible with a screening support to remove the work of art. As a last resort, leave the glazing and work of art to air-dry between blotting paper under a light weight.

e. Remove matting (window and attached back mat) with work of art.

f. Transfer matting using support where necessary and place face up on smooth, flat surface.

g. Lift window mat and detach work of art from back mat by carefully cutting hinges. If work of art is not mounted according to conservation standards and is attached firmly and directly to mat or backing board, consult a conservator.

h. Proceed to dry work of art.

2. Drying: Prints and other works with **non water-soluble** components should be frozen or dried within 48 hours. Paper-based works with stable media may be vacuum freeze-dried. If air-dried, use the following procedures:

a. Support the item with a non-woven support (e.g. Pellon or other brand of spun polyester) to aid in safe handling.

b. Place the item on a smooth, flat surface between layers of blotting paper.

c. Place a sheet of masonite on top with the rough side of the masonite facing away from the item. Weigh the masonite down evenly.

d. Change the blotters frequently until the item is dry.

3. Drying watercolors and other works with **water-soluble components** must be frozen or dried immediately. Paper-based works may be vacuum freeze-dried. For air-drying, proceed as follows:

a. Support the item with a screen or a non-woven support.

b. Place the item on a clean, dry surface and allow it to air-dry. Do not attempt to blot the item, since this may result in offset losses of water-soluble components.

c. Consult a conservator after air-drying.

Easel Paintings

The following procedures are suggested for framed (glazed and unglazed) items in damp, but sound condition.

1. Priority: Paintings should be dried immediately.

2. Preparation for drying

    a. Place frame face down on smooth, flat surface covered with blotting paper or bubble pack where necessary.

    b. For wood frames, carefully remove hanging hardware, dust seal, nails, or brackets and backing boards.

    c. For metal frames, carefully remove corner hardware, hanging hardware, and backing boards.

    d. Ensure that painting has not adhered to rabbet of frame, spacer, liner, or glazing by gently lifting each side of the painting one at a time to ensure freedom of movement. If glazing is broken but glass is still intact, hold the glazing together with pressure-sensitive tape. The frame may then be laid face down and the painting removed. If the glazing is shattered and broken pieces have dropped behind the remaining glass, keep the frame in a vertical position and use extreme care to remove all loose pieces of glass. If the painting is damaged by the glass, consult a conservator.

    e. Carefully lift painting straight up and out of frame.

    e. Proceed to dry work of art.

3. Drying: Oils, acrylics, temperas, etc. **on solid supports** (cardboard, canvasboard, masonite)

    a. After the painting is removed from its frame, place it face-up on several layers of clean white blotting paper or uninked newsprint on a clean, flat surface.

    b. Cover the face of the painting with Japanese tissue or (if unavailable), uninked newsprint, then place 3-4 layers of white blotting paper on top of the painting. Where the paint is irregularly applied with thick impasto, use sufficient layers of blotting paper to cushion the projections against their possible flattening under pressure.

c. Place a slightly larger sheet of masonite on top of the painting, taking care to ensure that the rough side of the masonite faces away from the painting. Weigh the masonite down, particularly around the edges, to prevent curling.

d. Change the blotting paper until the painting is dry.

e. Replace with fresh, dry blotting paper and let the painting stabilize under the weights for several days. Do not change the first layer of Japanese paper or newsprint until drying has been completed. If this layer does not easily detach, leave it in place to be removed later by a conservator. If this layer becomes detached at any time before the drying process has been completed, replace it carefully with a fresh protective layer when changing the blotters.

4. Drying: Oils, acrylics, temperas, etc. **on canvas** (linen, cotton, synthetics)

a. Do not remove the unframed painting from its stretcher.

b. Protect the face of the painting with Japanese paper (if available), or uninked newsprint. Keep the layers of tissue or newsprint flat and wrinkle-free.

c. Place the painting face-down onto a flat, firm surface covered with layers of white blotting paper (if available) or uninked newsprint.

d. Add layers of white blotting paper to the back of the canvas in the area of the stretcher bars. Fill to a depth somewhat higher than the bars. When weighted, a slight pressure will be exerted on the canvas.

e. Cover the entire back of the painting with a sheet of masonite and weigh it down. The edges should be especially weighted to prevent warping of the wooden stretcher bars.

f. Change the paper, ideally every half-hour, until dry. Leave the protective layer of Japanese paper in place until drying is completed. Check this layer for creases every time the blotting paper is changed.

g. If the protective layer of Japanese paper has not come off on its own when the drying is complete, leave it to be removed by a conservator at a later date.

Animal Materials: Bone, Hair, Horn, Ivory, Shell

1. Priority: Begin air-drying within 48 hours.

2. Handling Precautions: These may be extremely fragile when wet. Use supports to move items.

3. Preparation and Packing
   a. Rinse or sponge with clean water to remove mud and other debris.
   b. Drain and blot to remove excess moisture.
   c. Separate items with freezer paper or waxed paper to prevent bleeding of colors between objects.
   d. Transport in boxes lined with open plastic (polyethylene) bags.

4. Drying Method: Air-dry slowly on non-rusting screens.

Animal Skins: Buckskin and Other Flexible Leathers

1. Priority: Air-dry within 48 hours.

2. Handling Precautions: Leather may be extremely fragile when wet, and metal fasteners may tear through skin. Use supports to move items.

3. Preparation and Packing
   a. Rinse or sponge with clean water to remove mud and other debris.
   b. Drain and blot to remove excess moisture.

4. Drying Method: Air-dry. May require manipulation while drying to retain flexibility.

Animal Skins: Leather and Rawhide

1. Priority: Air-dry within 48 hours.

2. Handling Precautions: Leather (especially items with red-rot) may be extremely fragile when wet. Use supports to move items.

3. Preparation and Packing
   a. Rinse or sponge with clean water to remove mud and other debris.
   b. Drain and blot to remove excess moisture.
   c. Pad shaped artifacts with toweling or uninked paper.

4. Drying Method: Air-dry.

Animal Skins: Parchment and Vellum

1. Priority: Immediately freeze dry.

2. Preparation and Packing: Interleave sheets between folders, and pack items flat.

3. Drying Method: Air-dry. Do not freeze-dry gilded or illuminated manuscripts. It is not generally recommended to freeze or vacuum freeze-dry vellum

Basketry

1. Priority: Air-dry as soon as possible.

2. Handling Precautions: May be fragile and heavy when wet. Use supports to move items.

3. Preparation and Packing
   a. Rinse in clean water to remove mud and debris.
   b. Drain and blot to remove excess water.
   c. Separate items with freezer paper or waxed paper.

4. Drying Method: Air-dry. Pad out with uninked paper, toweling, or colorfast fabric.

Ceramics, Glass, and Stone

General Instructions: These can be allowed to air-dry if they have been immersed in relatively clean water. However, if exposed to salt water, mud, oil, or other contaminants, keep them wet until you can consult a conservator. Pottery that has been previously restored using a water-soluble glue should be left for treatment by a conservator.

1. Ceramics and Porcelain

   a. Handling Precautions
      (1) Many old pieces have been repaired, and these repairs will come apart when immersed for any length of time.
      (2) Keep pieces together in plastic bag or box, and label bags.

   b. Preparation and Packing
      (1) Glazed pieces can wait until there is time to wash them off. Gilded pieces should be dabbed off with a soft cloth.
      (2) Bag or box when possible, and pack dry if possible.
      (3) Wrap pieces individually to prevent more damage.

c. Drying Method: Air-dry.

2. Unglazed Pottery/Porcelain

a. Handling Precautions: Same as Ceramics and Porcelain

b. Preparation and Packing
(1) Wash off as soon as possible, or dry with mud on and remove later with a soft brush.
(2) Bag or box when possible, and pack dry if possible.
(3) Wrap pieces individually to prevent more damage; can be packed in one box with dividers.

c. Drying Method: Air-dry.

3. Painted Ceramics (unglazed)

a. Handling Precautions: Same as above

b. Preparation and Packing
(1) Do not wash; dry as is.
(2) Bag or box when possible, and pack dry if possible.
(3) Wrap pieces individually to prevent more damage; can be packed in one box with dividers.

b. Drying Method: Air-dry.

Furniture

1. Solid wood pieces

a. Handling Precautions: If joints are saturated, tie up with cord or thick string.

b. Preparation and Packing
(1) Wash off mud with clean water as soon as possible, then dab dry.
(2) Wipe with disinfectant if necessary. A solution of 50% alcohol in water will discourage mold but may damage finish. If in doubt, consult a conservator.
(3) Do not stack or place other objects on top to dry.

c. Drying Method
(1) Air-dry under cover if possible.

(2) Dry slowly to minimize cracking and splitting.
(3) Expect surface coatings to discolor.
(4) Contact a conservator

2. Veneered pieces

a. Handling Precautions: Handle as little as possible.

b. Preparation and Packing: Follow instructions for solid wood pieces.

c. Drying Method
(1) Air-dry, following instructions for drying solid wood.
(2) Air-dry in an "envelope" of cotton fabric or plastic, if possible, to catch pieces that may fall off. Keep all pieces for replacement when piece is dry.
(3) Dry under weights to hold veneer in place.

3. Partially upholstered furniture

a. Handling Precautions: Keep pieces together.

b. Preparation and Packing
(1) Follow instructions for solid wood pieces.
(2) Remove lift-out seats and rinse with clean water.

c. Drying Method
(1) Air-dry, following instructions for drying solid wood.
(2) Wrap upholstered/textile seats and other parts in clean sheet or towels to wick dry.

4. Upholstered furniture

a. Handling Precautions: Handle all furniture with gloves.

b. Preparation and Packing
(1) Follow instructions for solid wood pieces.
(2) Remove and rinse textile objects such as cushions.

c. Drying Method
(1) Air-dry, following instructions for drying solid wood.
(2) Wrap upholstered components such as cushions in clean sheet or towels to wick dry.

Metals

1. In most cases, the best treatment for wet metal is to remove mud and debris with clean water, then blot off the water with toweling.

2. Air-dry as soon as possible. Items can be dried in an oven at 100° Fahrenheit.

3. If the item has moving parts (e.g., camera, watch), wash the item in clean water, freeze it, and leave it for a conservator for special treatment. One may attempt freeze-drying of these objects, but it is best to leave this decision to a conservator.

4. Painted metal objects should be rinsed in clean water before drying. However, avoid cleaning flaking or peeling areas. Painted surfaces or other applied decorations or labels may be soft and fragile, so avoid touching them. If possible, keep flaking areas horizontal and face-up during handling, packing, and/or drying.

5. Fragile metal objects should be frozen without washing. Although one may attempt freeze-drying of these objects, as well as items with moving parts, it is advisable to leave this decision to a conservator.

6. Items that are a combination of metal and other materials may fall apart as a result of washing. If this happens, keep the components together to be reassembled at a later date. Consult a conservator to determine the appropriate drying treatment.

7. In the case of iron, steel, and copper, there is a risk of damage because of the stains (including rust) caused by these wet metals. Avoid letting them contact other materials.

Natural History Specimens

1. Priority: Freeze or air-dry within 48 hours.

2. Handling Precautions: Use gloves and wear surgical mask while handling, for many stuffed mounts contain arsenic or other pesticides and may be extremely hazardous to your health.

3. Preparation and Packing
   a. Drain and blot to remove excess water.
   b. Separate items with freezer paper or waxed paper.
   c. Support items with padding.
   d. Isolate items from other objects in boxes lined with plastic sheeting, and limit handling to avoid contamination.

4. Drying Method: Air-dry or freeze-dry.

Textiles

Because of the risk of mold developing on organic materials, textiles should be frozen or air-dried within 48 hours.

1. Small, flat textiles

    a. Handling Precautions: Do not unfold if fragile layers are stuck together.

    b. Preparation and Packing
        (1) Drain and blot to remove excess water.
        (2) Separate items with freezer paper or waxed paper to prevent dye staining between items.
        (3) If items are to be frozen, individual pieces can be placed in plastic trash bags to prevent dye transfer, then packed together into boxes.

    c. Drying Method: Air-dry or consult a conservator about freeze-drying.

2. Beadwork and painted fabrics

    a. Handling Precautions: Use supports to move items.

    b. Preparation and Packing
        (1) Drain and blot to remove excess water.
        (2) Separate items with freezer paper or waxed paper to prevent dye staining between items.
        (3) If items are to be frozen, individual pieces can be placed in plastic trash bags to prevent dye transfer, then packed together into boxes.

    c. Drying Method: Air-dry. Do not freeze beadwork or painted/stenciled items.

3. Framed textiles

    a. Handling Precautions: Unframe and remove mounting if possible. See instructions for works of art.

    b. Preparation and Packing
        (1) Drain and blot to remove excess water.
        (2) Separate items with freezer paper or waxed paper to prevent dye staining between items.

(3) If items are to be frozen, individual pieces can be placed in plastic trash bags to prevent dye transfer, then packed together into boxes.

c. Drying Method: Air-dry or consult a conservator about freeze-drying.

4. Large, flat textiles: blankets, coverlets, etc.

a. Handling Precautions: Drain items to reduce water weight, then use supports to move items.

b. Preparation and Packing
(1) Drain and blot to remove excess water.
(2) Separate items with freezer paper or waxed paper to prevent dye staining between items.
(3) If items are to be frozen, individual pieces can be placed in plastic trash bags to prevent dye transfer, then packed together into boxes.

c. Drying Method: Air-dry or consult a conservator about freeze-drying.

5. Garments

a. Handling Precautions: Buttons, metal fasteners, bodice boning, etc. will easily tear through wet fabrics. Use supports to move items.

b. Preparation and Packing
(1) Drain and blot to remove excess water.
(2) Separate items with freezer paper or waxed paper to prevent dye staining between items.
(3) If items are to be frozen, individual pieces can be placed in plastic trash bags to prevent dye transfer, then packed together into boxes.

c. Drying Method:
(1) Air-dry. Pad out with uninked paper toweling, net, or colorfast fabric to restore shape.
(2) Consult a conservator about freeze-drying.

6. Tapestries and rugs

a. Handling Precautions: These are extremely heavy and fragile when wet. Use supports to move items.

b. Preparation and Packing

(1) Drain and roll with toweling to remove excess water.
(2) Unroll item, remove toweling, and repeat procedure if needed.
(3) Fold or roll individual items.

c. Drying Method: Air-dry or consult a conservator about freeze-drying.

Wood, unpainted

1. Priority: Begin to air-dry within 48 hours.

2. Preparation and Packing
   a. Remove mud and debris with clean water.
   b. Drain and blot to remove excess water.
   c. If packing is necessary, wrap items in blotting materials under loosely draped plastic (polyethylene) sheeting.

3. Drying Method: Air-dry slowly, under plastic sheeting. Use fans to increase air circulation but not aimed directly at objects.

Wood, polychromed

1. Priority: Begin to air-dry within 48 hours.

2. Handling Precautions: Surfaces may be extremely fragile and flaking. Avoid touching painted areas. Keep flaking areas in horizontal, face-up position if possible.

3. Preparation and Packing
   a. Wrap under loosely draped plastic (polyethylene) sheeting, avoiding contact with painted surface.
   b. Contact a conservator immediately for advice.

4. Drying Method: Air-dry slowly, under plastic sheeting. Items may require immediate attention by a conservator.

Appendix R: Utility/System Malfunctions

Appendix R: Utility/System Malfunctions

Authorization

Notify one of the following staff when there is a problem with the facilities such as a power outage, water leak, breakdown of the heating/air-conditioning system, suspected gas leak, accidental sprinkler discharge, etc. They are authorized to initiate a service request.

Name/Title	Office Phone	Home Phone/Beeper

Emergency Contacts

The following other contacts may be made as necessary: *[You may list here some of the more common problems and the person/office to contact (e.g., utility companies, maintenance staff, etc.). These may be reproduced from the "Emergency Instructions" sheet.]*

Problem	Contact	Office	Home/Beeper

Emergency Shut-Offs

Many of these shut-offs require special tools, and in most institutions only a member of the facilities/maintenance department has access to those tools and authorization to operate the shut-offs. List here the location of shut-offs and be sure all switches, valves, and breakers are clearly labeled. The "Procedure" may be to contact a particular staff member, but in some cases it may also be appropriate to outline the procedure the maintenance staff uses to operate the shut-offs.

Main electrical cut-off switch

Location: _____

Procedure: _____

_____

_____

_____

_____

Main water shut-off valve

Location: _____

Procedure: _____

_____

_____

_____

_____

Main gas shut-off:

Location: _____

Procedure: _____

_____

_____

_____

_____

Sprinkler system controls:

Location: _____

Procedure: _____

_____

_____

_____

_____

Heating/cooling system controls:

Location: _____

Procedure: _____

_____

_____

_____

_____

Ventilation system shut-down:

Location: _____

Procedure: _____

_____

_____

_____

_____

Appendix S: Vaults, Keys, and Combinations

Appendix S: Vaults, Keys and Combinations

Vaults and Combinations

Use the following procedures when opening the vault located_____*[specify location(s)]:*

[Be aware that vaults may be covered by different fire protection systems than the general collections. Consult with the fire department regarding procedures for opening vaults after a fire, and outline the procedures here. If your vaults contain classified materials, also outline any special procedures for entering those vaults after a disaster.]

_____

_____

_____

_____

The following staff know the combinations or have special keys for safes, vaults, and other high-security areas:

[If special procedures or security clearance is required for access to those areas, you may wish to outline the procedures in this section. However, be aware that everyone who receives a copy of the disaster plan will then see the access procedures. Therefore, in the interest of security, it is most prudent to outline the procedures in a separate document that has more limited distribution.]

Area	Name/Position	Phone: Office/Home
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Master Keys or Cards

The following staff have master keys or key-cards that may be needed in order to get access to parts of the building:

Name/Position	Phone: Office/Home

Mechanical/Janitorial Rooms

[If janitorial closets or mechanical rooms are locked and require special authorization or restricted-access keys, provide a listing of those rooms and identify the staff member or unit that has keys and how to contact them.]

For emergencies in these areas, contact the following:

Room	Name/Position	Phone: Office/Home

Appendix T: Bibliography

Appendix T: Bibliography

Use this bibliography as the basis for creating your own bibliography of reference materials. In place of the ordering information in the citations below, add information about the in-house location of each or the names of organizations that might lend a copy.

Books

Alire, Camilla A. *Library Disaster Planning and Recovery Handbook.* New York: Neal-Schuman, 2000.

Anderson, Hazel, and John E. McIntyre. *Planning Manual for Disaster Control in Scottish Libraries & Record Offices*. Edinburgh: National Library of Scotland, 1985. 75 p.

> A useful compendium of basic information (conveyed primarily through summary checklists) on disaster prevention, response, and recovery.
>
> *National Library of Scotland, George IV Bridge, Edinburgh EH1 1EW, Scotland.*

Anglim, Christopher. *Survey on Emergency Preparedness Planning*. Littleton, Colo.: Fred B. Rothman Publications, 2000.

ARMA International Guideline for Records and Information Management: Magnetic Diskettes—Recovery Procedures. Prairie Village, KS: Association of Records Managers and Administrators, Inc., 1987. 6 p.

> Well-illustrated, practical instructions for salvaging water-damaged diskettes through a simple procedure.
>
> *ARMA International, 13725 W. 109th Street, Suite 101, Lenexa, KS 66215, (800)-422-2762.*

Artim, Nick. "An Introduction to Automatic Fire Sprinklers." *WAAC Newsletter* 16: 3 (September 1994), 20-27 and 17: 2 (May 1995), 23-28.

> Clear explanation of the types of sprinkler systems and sprinkler heads, with practical assessment of the benefits and drawbacks of each.

Balloffet, Nelly, and Jenny Hille. *Emergency Planning and Recovery Techniques: A Handbook for Libraries, Historical Societies and Archives in the Hudson Valley.* Elmsford, N.Y.: Lower Hudson Conference, 1999.

Barton, John P., and Johanna G. Wellheiser, eds. *An Ounce of Prevention: A Handbook on Disaster Contingency Planning for Archives, Libraries and Record Centres*. Toronto: Toronto Area Archivists Group Education Foundation, 1985. 192 p. Out of print.

One of the most practical and comprehensive manuals published on disaster prevention, planning, and recovery.

Birch, Eugenie L. *Rebuilding Urban Places After Disaster: Lessons from Hurricane Katrina (The City in the Twenty-First Century).* University of Pennsylvania Press 2006. 375 Pages.

Breighner, Mary, and William Payton. *Risk and Insurance Management Manual for Libraries*. Chicago: American Library Association, 2005.

Brooks, Connie. *Disaster Preparedness*. Washington, D.C.: ARL Office of Management Services, 1993. 184 p.

Developed to help libraries develop disaster plans. Outlines a participative, staff-led planning process and includes copies of some articles and models and documents. Augments the ARL *Preservation Planning Program Self-Study Manual* (see Merrill-Oldham and Reed-Scott).

ARL/OMS, 21 Dupont Circle NW, Suite 800, Washington, DC 20073-0692 (202-296-2296). $15. Prepayment required.

Buchanan, Sally A., and Toby Murray. *Disaster Planning: Preparedness and Recovery for Libraries and Archives--A RAMP Study with Guidelines*. Paris: UNESCO, 1988. 187p.

A good guide to disaster prevention, protection, recovery, and planning, with many useful forms and resource lists in appendices. Includes comprehensive bibliography by Toby Murray.

UNESCO, Maison de l'Unesco, 7 Place du Fontenoy, Paris F75007, France.

Cravey, Pamela J. *Protecting Library Staff, Users, Collections and Facilities : A How-To-Do-It Manual.* New York : Neal Schumann Publishers, 2001.

Daniels, Ronald J. *On Risk and Disaster: Lessons from Hurricane Katrina.* University of Pennsylvania Press 2006. 304 Pages.

Drewes, Jeanne. "Computers: Planning for Disaster." *Law Library Journal,* 81 (Winter 1989), 103-116.

Outlines strategies for protecting hardware and software against loss, protecting them from damage, and incorporating them in disaster plans. Includes practical, detailed guidelines for backup of mainframes, mini- and microcomputers, and optical disk systems, along with guidelines for protection and insurance coverage. Good bibliography.

Eulenberg, Julia Niebuhr. *Handbook for the Recovery of Water Damaged Business Records*. Prairie Village, KS: Association of Records Managers and Administrators, 1986. 54 p.

Basic guidance on recovery of magnetic media, photographs, and business records.

ARMA International, 13725 W. 109th Street, Suite 101, Lenexa, KS 66215, (800)-422-2762.

Fortson, Judith. *Disaster Planning and Recovery: A How-To-Do-It Manual for Librarians and Archivists*. How-To-Do-It Manuals for Libraries, no. 21. New York: Neal-Schuman Publishers, 1992. 181 p.

Practical handbook on planning, recovery, and prevention with respect to books, papers, photographs, microforms, and tapes. Includes sample disaster plan and lists of suppliers and resource people.

Neal-Schuman Publishers, 100 Varick St., New York, NY 10013 (212-925-8650). $39.95, plus shipping.

Fox, Lisa L. "Management Strategies for Disaster Preparedness." Pp. 1-6 in *The ALA Yearbook of Library and Information Services*, vol. 14. Chicago: ALA, 1989.

Addresses four key concepts for moving an institution beyond the planning stage and into successful implementation.

Genovese, Robert, Trish Taylor, and Edward White. *Disaster Preparedness Manuel.* Buffalo, N.Y.: W.S. Hein, 2003.

Genovese, Robert, Trish Taylor, and Edward White. *Disaster Preparedness Manuel.* Buffalo N.Y.: W.S. Hein, 2006

Halsted, Deborah D., Richard P. Jasper and Felicia M. Little. *Disaster Planning: A How-To-Do-It Manual for Librarians with Planning Templates on CD-ROM.* New York: Neal Schuman Publishers, 2005.

Hendriks, Klaus B., and Brian Lesser. "Disaster Preparedness and Recovery: Photographic Materials." *American Archivist* 46 (Winter 1983), 52-68.

Provides excellent, research-based advice on techniques for salvaging photographic materials.

Hoffman, Susanna M. *Catastrophe & Culture: The Anthropology of Disaster (School of American Research Advanced Seminar Series).* Santa Fe, New Mexico, School of American Research Press, 2002, 312 Pages.

The Inside Track to Disaster Recovery. Prairie Village, KS: Assn. of Records Managers and Administrators, 1986. 14-minute VHS color videotape.

Basic introduction to disaster recovery (packing, drying and restoration, and relocation) of records, microforms, books, and magnetic media. Useful, but must be augmented by other readings and training.

ARMA International, 13725 W. 109th Street, Suite 101, Lenexa, KS 66215, (800)-422-2762.

International Directory of Public Refrigerated Warehouses. Bethesda, MD: International Association of Refrigerated Warehouses. Annual.

International listing of freezer facilities.

International Association of Refrigerated Warehouses, 7315 1500 King Street, Suite 201, Alexandria, V.A. 22314(703)-373-4300.. $150 for clients outside the perishable foods industry.

Kahn, Miriam. *Disaster Response and Planning for Libraries.* Chicago: American Library Association, 2003.

Kifowit, Mark. *Disaster Recovery Planning in Times of War and Terrorism.* Western Washington University, 2005, 110 Pages.

Layne, Stevan P. *The Cultural Property Protection Manual: The "How To" Guide for Managers/Administrators.* Dillion, CO: Layne Consultants International, 2002.

Lundquist, Eric G. *Salvage of Water Damaged Books, Documents, Micrographic and Magnetic Media*. San Francisco: Document Reprocessors, 1986. 103 p.

Case histories of a major library fire and an area-wide flood, with useful tips on factors that should be accommodated in disaster planning.

Document Reprocessors, Inc., 1384 Rollins Rd., Burlingame, CA 94010 (800)-437-9464.Free.

Mason, Margie. *Battling with Books: Aspects of Health and Safety for Library Assistants: Do's and Donts and Try These.* Chelmsford, Essex, England: Anglia College Enterprises, 1997.

Mathieson, David F. "Hurricane Preparedness: Establishing Workable Policies for Dealing with Storm Threats." *Technology & Conservation* (Summer 1983), 28-29.

Practical, basic tips.

Matthews, Graham and John Feather. *Disaster Management for Libraries and Archives.* Aldershot, Hampshire, England; Burlington VT: Ashgate Pub., 2003.

McCauley, April, and Bethany L. Hawkins. *Disaster Planning, Preparedness and Recovery: A Resource Guide.* Nashville, TN: American Association for State and Local History, 2006.

McColgin, Michael. *Disaster Planning for Rural Libraries in Arizona.* Arizona Dept. of Library, Archives and Public Records, 1988.

Merrill-Oldham, Jan, and Jutta Reed-Scott, eds. *Preservation Planning Program: An Assisted Self-Study Manual for Libraries*. Rev. ed. Washington, D.C.: ARL Office of Management Services, 1993. 138p.

Developed to help libraries plan and implement preservation programs in a process that educates and involves a large number of staff members. Outlines a comprehensive self-study process, and augmented by a guide to disaster planning (see Brooks, *Disaster Preparedness*).

ARL/OMS, 21 Dupont Circle, NW, Suite 800, Washington, DC 20073-0692 (202-296-2296). $40. Prepayment required.

Morris, John. *Managing the Library Fire Risk*. 2 ed. Berkeley: Univ. of California, 1979. 147 p.

While the discussion of fire prevention and extinguishing technologies are now dated, the case studies of some disastrous library fires are informative and suggest critical issues in fire safety planning.

Myers, James N., and Denise D. Bedford, eds. *Disasters: Prevention and Coping*. Proceedings of the Conference, May 21-22, 1980. Stanford: Stanford University Libraries, 1981. 177 p.

Various papers on the Stanford University flood; planning; freeze drying; disaster prevention; cooperation; fire, insect, and water damage.

National Fire Protection Association. *NFPA 910: Recommended Practice for the Protection of Libraries and Library Collections*. Quincy, MA: NFPA.

Information on technologies for fire detection and extinguishing systems, with results of tests on the efficacy of compact storage in reducing fire damage. ANSI-approved as a national standard.

NFPA Publication Sales Div., Batterymarch Park, Quincy, MA 02169 (800-344-3555). $12, plus shipping.

NFPA 2001: Standard on Clean Agent Fire Extinguishing Systems. Quincy, MA: NFPA
Key standard for fire-suppression systems designed to provide an alternative to Hanlon.

NFPA Publication Sales Div., Batterymarch Park, Quincy, MA 02169 (800-344-3555).

National Task Force on Emergency Response. *Emergency Response and Salvage Wheel*. Washington, D.C.: The Task Force, 1997.

Brief, at-a-glance information on response and salvage procedures for cultural institutions.

National Task Force on Emergency Response, c/o National Institute for Conservation of Cultural Property, 3299 K St., N.W., Washington, DC 20007 (888-979-2233); $9.95 each, with discounts for multiple copies and non-profit organizations.

Nyberg, Sandra. *The Invasion of the Giant Spore*. Atlanta: SOLINET, 1987, updated and revised 1995.

A comprehensive guide to the prevention and eradication of mold.

SOLINET, 1438 W. Peachtree St., Ste. 200, Atlanta, GA 30309-2955 (800-999-8558).

Free. Available online at http://www.solinet.net/emplibfile/moldnew.pdf.

O'Connell, Mildred. "Disaster Planning: Writing and Implementing Plans for Collections-Holding Institutions." *Technology and Conservation* (Summer 1983), 18-24.

A good introduction to the key issues in disaster planning.

Odegaard, Nancy, and Alice Sadongei. *Old Poisons, New Problems: A Museum Resource for Managing Contaminated Cultural Materials.* Walnut Creek, CA: AktaMira Press, 2005.

Ogden, Sherelyn, ed. *Preservation of Library and Archival Materials: A Manual*. 3rd ed. Andover, Mass.: Northeast Document Conservation Center, 1999. one volume.

A collection of practical leaflets, including ones on drying collections, salvaging photographs, mold prevention, and vulnerability of collections during renovation. In addition to disaster-related leaflets, includes others on preservation planning, environmental control, storage and handling, reformatting, and conservation.

NEDCC, 100 Brickstone Sq., Andover MA 01810 (978-470-1010) or www.nedcc.org.

Parker, Thomas A. "Integrated Pest Management for Libraries." In *Preservation of Library Materials,* ed. Merrily A. Smith, IFLA Publications 40/41. Munich: K. G. Saur Verlag, 1987, 103-123

Excellent descriptions of common library pests, with illustrations, descriptions of damage, and controlling strategies (especially non-chemical).

Pelling, Mark. *The Vulnerability of Cities: Natural Disaster and Social Resilience.* Earthscan Publications Ltd. June 2003.

Price, Lois Olcott. *Mold--Managing a Mold Invasion: Guidelines for Disaster Response*. Technical Series No. 1. Philadelphia: Conservation Center for Art and Historic Artifacts, 1994. 6 p.

Good introduction to mold issues for libraries.

CCAHA, 264 S. 23rd St., Philadelphia, PA 19103 (215-545-0613).

Schnare, Robert E. "Incendiary Gilt: When Your Labels Go up in Smoke." *Conservation Administration News*, 36 (Jan. 1989), 1-2.

Case study with practical guidance on recovery from fire.

Seal, Robert A. "Insurance for Libraries." *Conservation Administration News*, 19 (October 1984), 8-9 and 20 (January 1985), 10-11, 26.

Good introduction to issues related to insurance coverage for libraries.

Siebert, Ann. *Emergency Drying Procedure for Water Damaged Collections (LOC)*. Washington, D.C.: Library of Congress: National Archives and Records Administration, 2001.

Trinkley, Michael. *Can You Stand the Heat? A Fire Safety Primer for Libraries, Archives and Museums*. Atlanta: Southeastern Library Network, 1993. 70 p.

Practical introduction to all the major components of fire safety. Includes detailed explanations of all the fire detection mechanisms and suppression devices typically used in repositories, with analysis of their features and benefits. Stresses the importance of conducting fire safety inspections and outlines the necessary elements of a fire safety program.

SOLINET, 1438 W. Peachtree St., Ste. 200, Atlanta, GA 30309-2955 (800-999-8558).

Trinkley, Michael. *Hurricane! Surviving the Big One: A Primer for Libraries, Museums and Archives.* Columbia S.C.: Chicora Foundation; Atlanta GA: Southeastern Library Network, 1988.

Trinkley, Michael. *Hurricane! Surviving the Big One: A Primer for Libraries, Museums, and Archives*. Columbia, S.C.: Chicora Foundation, 1993. 76 p.

Detailed guidance on preparation for and recovery from a hurricane. Includes sections on building construction methods that withstand hurricane-force winds, along with a step-by-step discussion of activities before, during, and after a storm. Several suppliers and service providers recommended within the text.
Chicora Foundation, P.O. Box 8664, Columbia, SC 29202-8664 (803-787-6910).

Walsh, Betty. "Salvage Operations for Water Damaged Collections." *WAAC Newsletter* 10: 2 (May 1988), 2-5.

Walsh, Betty. *Salvage Operations for Water Damaged Archival Collections: A Second Glance.* Ottawa: Canadian Council for Archives= Conseil Canadien des Archives, 2003.

"Salvage Operations for Water Damaged Archival Collections: A Second Glance." *WAAC Newsletter* 19: 2 (March 1997), 12-23. Available online at http://palimpsest.stanford.edu/waac/wn/wn19/wn19-2/wn19-207.html

Wellheiser, Johanna G., and Jude Scott. *An Ounce of Prevention: Integrated Disaster Planning for Archives, Libraries and Record Centres.* Lanham, Md.: Scarecrow Press; Toronto, Ont. :Canadian Archives Foundation, 2002.

Wellheiser, Johanna G., and Nancy E. Gwinn. *Preparing for the Worst, Planning for the Best: Protecting Our Cultural Heritage from Disaster: Proceedings of a Conference Sponsored by the IFLA Preservation and Conservation, and the Council on Library and Information Resources, Inc., with the Akademie der Wissenschaften and the Staatsbibliothek zu Berlin, Berlin, Germany, July 30- August 1, 2003.* Munchen: K.G. Saur, 2005.

Wilson, J. Andrew. "Fire Fighters." *Museum News* (November/December 1989), 68-72.

Excellent introduction to the types of automatic fire suppression systems available and strong arguments for their use. Equally applicable to libraries and archives.

Vale, Lawrence J. *The Resilient City: How Modern Cities Recover from Disaster*. Oxford University Press, USA 2004 390 pages.

Serial Publications

Disaster Recovery Journal. Quarterly.

Focuses on disaster preparedness for business organizations, with particular attention to information technology issues. Ads are a useful source of information on specialized recovery companies.

Disaster Recovery Journal, P.O. Box 510110, St. Louis, MO 63151 (314-894-0276); e-mail drj@drj.com; Web site http://www.drj.com. $10/yr.; free to qualified contingency planners.

Internet Resources[23]

American Institute for Conservation (AIC)

Links to disaster resources,. The free AIC Guide to Conservation Services can help you locate conservation professionals where you are.

Access http://aic.stanford.edu/library/online/disaster/index.html or (202)-452-9545

[23] Two publications were particularly useful in developing this list of resources. Grateful acknowledgement goes to Linda Musser and Lisa Recupero, "Internet Resources on Disasters," *C&RL News* (June 1997), 403-07, and to *Regional Alliance for Preservation* (Sept. 1997).

Amigos Preservation Services

Amigos Preservation Services (APS) are available to archives and libraries in the

> Southwestern U.S., primarily the states of Arizona, Arkansas, New Mexico, Oklahoma, and Texas, with planning activities and recovery from damage caused by various emergency situations, including natural disasters. Prior to, or following an emergency. APS can provide information, guidance, referrals to local resources and on-site assistance as required.
>
> *Access http://www.amigos.org/ or 1-800-843-8482*

Arts, Crafts, and Theater Safety, Inc. (ACTS)

> Web site addresses hazards posed by toxic or dangerous materials used in the arts, including conservation. Offers health and safety information, educational and technical information, referrals to physicians and other professionals. Publications for sale (at $.25 per page) include a 4-page data sheet about understanding Material Safety Data Sheets and a 9-page data sheet about biological hazards.
>
> *Access* http://www.artscraftstheatersafety.org/ *or contact ACTS, 181 Thompson St., #23, New York, NY 10012-2586 (212-777-0062); e-mail ACTS@CaseWeb.com.*
>
> *The Chubb Corporation: Insurance Library*
>
> One of the nation's leading providers of insurance for cultural institutions offers a Web site with information on insurance policies, claims, procedures, etc.
> *Access http://www.chubb.com/library/*

Balboa Art Conservation Center

Offers salvage advice and information; call 619-236-9072

> *Access http://www.bacc.org/*

Conservation DistList

> Electronic discussion forum for a wide range of preservation and conservation issues, from highly technical to programmatic and philosophical. Associated database, Conservation OnLine (CoOL), has full-text resource materials, including some disaster plans, related publications, and links to disaster-related Web sites.
> *Send subscription request to consdist-request@lindy.stanford.edu. CoOL is accessible via the World Wide Web at http://palimpsest.stanford.edu/ and includes a section related to disaster preparedness.*

Conservation Center for Art and Historic Artifacts (CCAHA)

Excellent publications, some available on-line, about mold and disaster recovery of photographs, books and other types of collections.

Access: http://www.ccaha.org/ or phone 215-545-0613

Dartmouth Flood Observatory

The "Flood Archive" has a worldwide index map, report summaries, and a table that displays the start and end dates, number of deaths, damage estimates, and amount of land impacted for flood events since 1994. Includes many satellite images of flood events.
Access http://www.dartmouth.edu/~floods/

Disaster Mitigation Planning Web Site

The website is currently maintained by Michigan State University Libraries. Initial contributors were the Baltimore Academic Library Consortium, Conservation Center for Art and Historic Artifacts, Johns Hopkins University Milton S. Eisenhower Library Preservation Department, Library of Congress Preservation Directorate, Michigan State University Libraries and the Smithsonian Libraries Preservation Department.

Access http://matrix.msu.edu/~disaster/

Federal Emergency Management Agency

A wealth of information about FEMA's role and functions, a great deal of information on disaster response and recovery for a wide variety of natural disasters, and links to weather information, the U.S. Fire Administration, and other sources. While designed primarily for private citizens, the resources are generally relevant to organizations. Includes the Global Emergency Management System, a searchable database of disaster-related Web sites.

Access *http://www.fema.gov/*

Harvard University Library

Harvard's Preservation site includes procedures, supply and service sources (especially those for Boston and New England), and guidelines for disaster planning and recovery.

Access http://preserve.harvard.edu/emergencies/

Heritage Emergency National Task Force

Browse general guidelines for salvaging water-damaged books, photographs, textiles and other heirlooms. Includes **Emergency Response and Salvage Wheel,** an easy slide chart that helps protect precious collections and significant records.

Access http://www.heritagepreservation.org/
Or phone (888)-388-6789 OR (202)-233-0800

Hurricane/Tropical Data

Purdue University Weather Processor provides storm track charts and text-based tables for storms in the Atlantic (from 1886), Eastern Pacific (from 1949), and Western Pacific (from 1945). Provides a composite chart for each season and for each storm. Extensive links to satellite and radar imagery.

Access http://www.aoml.noaa.gov

Hurricanes, Typhoons, and Tropical Cyclones FAQ

Lists the costliest, deadliest, longest, and most intense events, as well as other records and data about tropical storms.

Access http://www.aoml.noaa.gov/hrd/tcfaq/tcfaqHED.html

Inland Empire Library Disaster Response Network

San Bernardino, CA

IELDRN offers a model mutual Air agreement and disaster plans

Access http://www.ieldrn.org/

Internet Resources for Risk Management and Information Systems

Articles from trade journals on risk management and information technologies.

Access http://rmisweb.com/

The IRIS Consortium

University research consortium provides a clickable epicenter map that supplies information on events in the last 30 days. IRIS SPYDER database provides detailed event-specific data files and maps for events since October 1996.
Access http://www.iris.edu

Kilgarlin Center for Preservation of the Cultural Record

University of Texas School of Information
Austin TX

Offers salvage information and advice; call 512-471-8290

Library of Congress Preservation Directorate

Emergency Drying Procedures for Water Damaged Collections: Concise information that covers air-drying of paper, books, and photographs, and recovery of mold.
Access http://www.loc.gov/preserv/emerg/dry.html or phone 202-707-5213

Michigan Technological University Volcanoes Homepage

Information on current volcanic activity, remote-sensing images of volcanoes, and links to other volcano-related Web sites. Coverage includes location/geological setting, topographic maps and air photos, meteorology, and bibliography.
Access http://www.geo.mtu.edu/volcanoes/

Midwest Art Conservation Center

Offer salvage advice and information; call 612-870-3120

Access http://www.preserveart.org/

Migratory Pests

Tracks information about migratory pests such as the desert locust, including situation reports and maps of infestations.

Access
http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGP/AGPP/ Locusts/Default.htm

Minnesota Historical Society

Information on salvaging personal belongings, historic belongings, and records damaged by natural disasters.

Access http://www.mnhs.org/index.htm or call 800-657-3773 or 651-259-3000

National Archives and Records Administration

Access http://www.nara.gov

National Center for Preservation Technology and Training

Access http://www.ncptt.nps.gov

National Earthquake Information Center

Information and maps on the latest earthquakes worldwide. Includes an interactive database that produces customized reports.

Access http://earthquake.usgs.gov/regional/neic/

National Fire Protection Agency (NFPA)

Access http://www.nfpa.org

National Hurricane Center

Provides current and historic tropical cyclone, hurricane, and high seas data, along with high wind/wave alerts and ocean weather for mariners and aviators.

Access http://www.nhc.noaa.gov

National Interagency Fire Center

Features wild land fire information for the U.S. Includes weekly incident reports by region and summaries of previous fire season statistics.

Access http://www.nifc.gov

National Landslide Information Center

Access to fact sheets, reports, and images of specific U.S. landslide events.

Access http://landslides.usgs.gov/

National Lightning Safety Institute (NLSI)

Nonprofit research organization's site contains lightning safety information, statistics on losses and damage from lightning, and quick facts.

Access http://www.lightningsafety.com/

National Media Laboratory

Research laboratory specializes in research on magnetic media, and provides useful information on Web site.

Access http://www.nml.org From "Search," select "preservation."

National Park Service

Access http://www.nps.gov

National Storm Prediction Center

Statistics on tornadoes and other severe storms, including monthly totals and averages for the U.S. Its historical archive contains data on tornadoes, hail, and convective winds. Statistics are given by state from the 1940s to 1995 for injuries, fatalities and costs, overall rankings, etc. Most files in the archive must be downloaded and unzipped.

Access http://www.spc.noaa.gov/

National Transportation Safety Board

Data on current and historic accidents in the U.S., by transportation mode (aviation, highway, marine, rail, pipeline) and hazardous materials.

Access http://www.ntsb.gov/

National Trust for Historic Preservation

Access http://www.nthp.org

National Weather Service

Access http://www.nws.noaa.gov/

Natural Hazards Center

Comprehensive information on natural disasters, including quick response reports of natural and man-made disasters, full text of many of the Center's publications, lists of organizations, and extensive links to other Internet sites.
Access http://www.colorado.edu/hazards/

Northeast Document Conservation Center (NEDCC)

As part of its Field Service NEDCC offers emergency assistance for institutions and individuals with damaged paper-based collections. NEDCC provides free telephone advice 24 hours a day if a disaster occurs

Access http://www.nedcc.org/home.php or call 978-470-1010

PADG-L. Preservation Administration Discussion Group

Listserv designed to address various issues of preservation management, including disaster planning and preparedness.

Send subscription request to padg@ala.org

Solinet

Web site includes Contents of a Disaster Plan, Disaster Recovery services and Supplies and list of Internet Disaster Resources.
Atlanta, G.A.

Access http://www.solinet.net/preservation/preservation_templ.cfm?doc_id=71
Or call 404-892-0943or 800-999-8558

Severe Weather Data

Provides links to current watches, warnings, advisories, and bulletins for all types of natural disasters including avalanches, earthquakes, flooding, fog, tornadoes, and wind. Focuses on the U.S.

Access http://twister.sbs.ohio-state.edu

The Tornado Project Online

Commercial site with links to descriptions of current (and some historic) tornado events in the U.S. Includes explanation of the Fujita tornado intensity scale.

Access http://www.tornadoproject.com/

Tsunami

Provides access to near-real time events via a link to the West Coast/Alaska Tsunami Warning Center.

Access http://www.geophys.washington.edu/tsunami/welcome.html

U.S. Geological Survey

The U.S.G.S. maintains a Web page on natural hazards. Also has a series of regional volcano observatories in the Pacific Rim.

Access natural hazards page at http://www.usgs.gov/themes/hazard.html. Also the Cascades Volcano Observatory (for Cascade Range, including Mt. St. Helens) at http://vulcan.wr.usgs.gov, Alaska Volcano Observatory (for area along the Aleutian arc) at http://www.avo.alaska.edu, and the Hawaiian Volcano Observatory at http://hvo.wr.usgs.gov/.

USA Today Weather Page

Gives temperature means, extremes, weather records, and recent weather highlights for locations worldwide. Includes good explanations of weather phenomena, and information and statistics on weather events such as hurricanes, severe storms, tornadoes, and waterspouts.

Access http://www.usatoday.com/weather/wfront.htm

WAAC Newsletter

Art conservation newsletter. Includes articles on various aspects of disaster preparedness. *Access http://palimpsest.stanford.edu/waac*

The Weather Channel

Access http://www.weather.com

Westwide Avalanche Network

Maintained by the American Association of Avalanche Professionals. Contains extensive information on current and past avalanche seasons.

Access http://www.avalanche.org/

Yahoo!

Index to disaster links on the Web is a useful compilation of miscellaneous sources for disaster events.

Access http://www.yahoo.com/Society_and_Culture/Environment_and_Nature/Disasters/