



# LIBRARY DISASTER PREPAREDNESS AND RECOVERY PLAN

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## LIBRARY DISASTER PREPAREDNESS AND RECOVERY PLAN

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#### 1.0 INTRODUCTION

The Disaster Preparedness and Recovery Plan is designed to provide information needed to reduce the possibility of disaster and to take appropriate actions should a disaster occur. The plan reflects the fact that most disasters involve water from broken pipes, backed-up drains, roof leaks, or from extinguishing a fire. Disasters are unpredictable. It is impossible to anticipate which staff members will be on hand when a disaster occurs. It is essential that the Disaster Preparedness and Recovery Plan always be accessible and that all staff members be familiar with its contents. All Library Employees are members of a Disaster Response Team and share the responsibility to preserve and protect the Library's holdings. In the event of a large-scale disaster and recovery operation, any staff member may all be called upon to assist as members of a Disaster Response Team.

Although not discussed in this plan, staff and patron security are paramount and should always be given the highest priority. Safety precautions are listed in the Library's Emergency Safety Manual and should be followed.

The objectives of the Disaster Preparedness and Recovery Plan are threefold:

1. Stabilize the condition of the materials
2. Salvage the maximum number of materials
3. Minimize restoration and rebinding costs

To achieve these objectives the Disaster Preparedness Plan:

1. Provides the basis for a systematic response to disasters which threaten library and archival records
2. Identifies key personnel and their roles
3. Establishes procedures and priorities for the recovery of materials
4. Identifies sources of supplies, equipment, and services for recovery and restoration of damaged materials

In addition, the Disaster Preparedness and Recovery Plan elicits information from library units in their local plans to be forwarded to the Preservation Librarian

for the creation of a "master plan" for the entire library system. In the event of a major disaster, the Library Administration will need to make major decisions, such as contracting for vacuum freeze-drying services. Implementation of the Disaster Preparedness and Recovery Plan, familiarity with its contents, and prearranged roles of Major Disaster Response Personnel will provide a framework for decision-making. Finally, most disaster preparedness plans are very rarely "active documents." On the contrary, the existence of a plan usually produces a false sense of security and disaster preparedness. As outlined in the plan, many steps, such as ongoing training and annual review with designated personnel, can insure successful implementation of the Disaster Preparedness and Recovery Plan and a well-organized recovery effort.

## **1.1 Acknowledgments**

The need for disaster preparedness and recovery first took strong hold after the catastrophic floods in Florence, Italy in 1966. Much was learned then as well as in later disasters and recovery. Using the knowledge gained, libraries developed plans for handling a disaster. Some of these plans were helpful in the development of our plan. In particular, the plans for Columbia University (recovery operations), New York University (format of the plan), the Library of Virginia (resources), and the workbook which accompanies the "Library and Archival Disaster-Preparedness and Recovery" video were most valuable. In addition, information presented at a SOLINET workshop (contents of a successful plan) was equally valuable. The efforts of these institutions and Peter Waters for his pamphlet Procedures for Salvage of Water-Damaged Library Materials are gratefully acknowledged.

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#### 2.0 Emergency Instructions

##### 2.1 Immediate Response

1. Do not panic. Stay calm.
2. Evaluate the situation so that you can report the incident accurately. Investigate quickly but carefully. Do not enter flooded areas unless certain that there is no danger from electricity. If uncertain, wait until electricity has been turned off and/or Facilities Management has verified that it is safe to enter the area.
2. Evacuate area; close doors but do not lock them. (In a fire, do not use elevator.)
3. Notify immediate supervisor, if present. Contact personnel on your unit's telephone tree. Also contact the Quick Response Team Leader Ellen Welch at 434-924-1055 or 434-977-3097 (home).
4. Call 9911 (University Police)
  - Identify yourself
  - Describe the problem (i.e., fire, flood)
  - Give the location of the problem (building name and room number and/or location of the building). If necessary, be prepared to give directions
  - Indicate size of the problem, any peculiar odors, etc.
  - Above all, stay calm and be specific

##### 2.2 Fire - Immediate Response

1. If you see a fire that is small enough to be easily and immediately contained, use one of the fire extinguishers nearest your area. Locations of the fire extinguishers are noted on the floor plans for each library unit. If there is any chance that the fire could re-ignite, call the Fire Department 9-911 and ask for fire assistance.  
Report the incident to the Library Administration at 434-924-3026 immediately.

2. If the fire cannot be easily contained or if there is no fire extinguisher in the immediate vicinity, signal a fire using a fire alarm station nearest your area. Alarm stations locations are noted on floor plans for each library unit. If possible, close off the area to keep the fire from spreading.

3. When a fire alarm is sounded, evacuation procedures are in the Library's Emergency Safety Manual and should be followed.

4. When evacuating a building, DO NOT USE ELEVATORS. Go to the nearest fire exit. If you detect fire or smoke in the area, then go to the closest alternative exit.

## **2.3 Assessment**

Once it has been determined that it is safe to re-enter the area, recovery procedures can be initiated:

1. Assess the situation
2. Notify and assemble necessary personnel – see Quick Response Team at: <http://www.lib.virginia.edu/cataloging/pres/QRT.html>
3. Establish a "command post" and working area
4. Procure and assemble the necessary supplies
5. Establish security measures
6. If possible, this is the best time for photographic documentation
7. Eliminate hazards
8. Stabilize the environment
9. Make a detailed assessment of the damage
10. Develop a detailed plan of action
11. Brief all assembled personnel

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#### 3.0 Communication

Good communication is essential to any disaster response and recovery. The following sections provide telephone numbers of key personnel and their specific roles during a disaster recovery operation.

#### 3.1 Contact List of Staff Trained in Disaster Preparedness

Contact list of staff trained in disaster preparedness:

See Quick Response Team at:

<http://www.lib.virginia.edu/cataloging/pres/QRT.html>

#### 3.2 Key Personnel and Their Roles

Chief Administrators: Diane Walker and Jeanne Hammer

Roles:

1. Maintain organizational contacts and exert authority as needed
2. Gain assistance and cooperation from those outside the organization
3. Authorize emergency expenditures
4. Coordinate with news media, insurance personnel, risk management, etc.

Team Leaders: Beth Camden and Ellen Welch

Roles:

1. Coordinate all recovery activities
2. Contact Selectors to make final decisions on materials

Operations Coordinators: Jeanne Hammer and Milly Crickenberger

Roles:

1. Establish internal communications network
2. Supervise procurement, receipt, and distribution of recovery supplies

Subject Specialists: Determined by location of disaster

Roles:

1. Assess damage to their collections

2. Assign priorities to materials, including the decision to discard
3. Begin planning for alternative means of access to damaged titles/records

Recorder: To be assigned/Preservation Section

Roles:

1. Record-keeping to track disposition of collections
2. Number/code boxed materials and pallets
3. Insure that all decisions and communications are recorded and well documented

Workers: To be assigned as needed

Roles: Carry out recovery operation

Supplementary Personnel: Facilities Management Personnel

Risk Management Officer

### **3.3 Disaster Response Telephone Tree**

Each Unit in the Library should complete a telephone tree and give a copy to all the staff in their unit and to the Preservation Coordinator. This enables staff to be kept well informed about the disaster and all recovery activities.

Disaster Response Telephone Tree Log – sample form follows



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#### 4.0 Being Prepared: Pre-disaster Information

Each library should have floor plans marked with the locations of fire extinguishers and fire exits. In addition there should be a list of which materials are priority for salvage. Being familiar with this information prior to a disaster is very important in managing a successful recovery operation.

See Library Floor Plans at: <http://www.lib.virginia.edu/floorplans.html>

#### 4.1 Salvage Priority List

Each library should also have a list of which materials are a priority for salvage and their location. This information should be noted on the floor plan or on a list that is kept with the floor plans and sent to the Preservation Coordinator.

Salvage Priority List – sample form follows at end of chapter

In general, there is only 48 hours to salvage wet, damaged material before mold develops. Time spent salvaging less important items could mean loss or damage to valuable materials. Since time is most critical for books with clay-coated (glossy) paper, film (microfilm, microfiche, slides, etc.), and water-soluble inks, these materials should hold top priority.

1. Several factors must be judged to determine the importance of each collection area.

Are the records vital?

Is the material replaceable in original or alternative format?

Would the cost of replacement be more or less than the estimated cost of salvage and/or repair?

Is the item available elsewhere?

How important is the item to the collection? Is it important to patrons? Is it essential to curriculum or research? Is it in an area of subject strength? Is it rare or unique?

2. The composition of some materials will determine the feasibility of recovery.  
Are there problem formats (e.g., clay-coated paper)?  
Are there fragile media (including brittle books)?

3. Unpredictable factors may influence priorities.  
An important piece of the collection may be too damaged or contaminated with mold for salvage.

#### **4.2 Disaster Closets and location of keys:**

The disaster closets are located on 1 New and 1M New in Alderman Library. Keys are located in Preservation, Cataloging and Circulation. Quick Response Team members should have their own key. The closets have a variety of supplies such as water vacs , rescue packages, paper towels, plastic sheeting, filter masks, clear gloves, mops, buckets, extension cables, blank newsprint, plastic trash bags, small plastic bags, freezer paper, wax paper, first-aid kits , toothpicks, small chips of alkaline board, duct tape, scissors, multi-cell flashlight with batteries, clipboards, pens, pads , log sheets, wax crayons, plastic clothes pins, distilled water, waterproof aprons, mylar, Kodak Photoflo solution, alcohol, rubber gloves and boots. There is also an extra copy of the Disaster Preparedness and Recovery Plan in a waterproof enclosure. Each library should have its own rescue package and as many of these supplies on hand as possible.



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### **5.0 Guidelines for Recovery Operations**

1. Verify that the area is safe to enter. Quick action is necessary but there are 48 to 72 hours before mold onset
2. Set up a recovery team and a command post. Do not try to organize at the scene of a major disaster. Staff should report in at the command post every morning and get briefed on the recovery operations for that day.
3. Before taking any action, be sure to give the recovery team clear, simple instructions. The basic principles are to minimize handling of damaged materials, and to keep the materials in order. The best way to achieve this is to organize a plan of action and communicate it with all members of the recovery team.
4. The environment must be stabilized to prevent the growth of mold. Ideal conditions for a recovery operation are 65 degrees and 50% humidity. Use fans and dehumidifiers to help stabilize the environment. (Raising the temperature will not lower the humidity--it will only accelerate mold growth.) Temperature and humidity should be monitored constantly. The air should be circulated in the

damaged area. This may be accomplished by running fans constantly. If possible, they should expel the humid air from the area.

5. Remove books from the disaster area. Handle materials carefully. Wet paper is very fragile. As books are moved, keep them in their current condition. Trying to close a book when it has swelled from water damage will force the spine to break. Do not try to treat them by cleaning or squeezing the water out. At this point, the most important task is to remove the damaged materials from the disaster area.

6. Frequently, the best way to remove damaged materials is by using a human chain. The number of staff on hand and the extent of the damage will determine the feasibility of this method. This helps to keep the materials in order as they are moved.

7. Line trucks and tables with plastic sheets, or wax paper. Keep the books from coming into contact with wooden trucks or tables. Books will adhere to the varnish when they are wet.

8. It is crucial to keep air circulating and low humidity/temperature in the recovery area. Stock the area with supplies such as: wax paper and/or freezer paper, paper towels, alkaline board chips, boxes, milk crates, and other supplies as needed.

9. An inventory should be kept as material is removed from the disaster area. Record keeping is very important throughout the recovery operations. (See Section 7.0)

10. Materials should be sorted by type of material and or condition: (Also consult the Salvage List to sort out any high priority items for treatment)

a. Photographic materials (microforms, negatives, slides). These materials should remain submerged in clean water and shipped for reprocessing. If this is impossible, freeze, even though ice crystals may rupture emulsion layer and leave marks on the film.

b. Leather, vellum books, Manuscripts, Rare books and Art on paper should only be treated by a Conservator.

c. Artifacts with water-soluble components (inks, dyes and watercolors) Depending on their value they should be treated by a Conservator. If treating:

- Separate sheets carefully
- Don't blot sheets
- Remove frames, mats if possible
- Lay flat with painting surface up

- Support with polyester sheets
- Set up fans and dehumidifiers
- Watch for mold growth
- Monitor temperature and humidity levels

d. Clay-coated paper (e.g., periodicals, art books, etc.). These are pages that are very glossy and will stick together as they begin to dry. Never stack these items together. Gently separate each page with either a paper towel, wax paper or clean newsprint. If this is not possible, freeze the book immediately. If these pages dry on their own, the pages will form a text block and will not separate.

e. Books thoroughly soaked. In general, freezing is indicated, although Air Drying may be possible.

f. Books wet around the edges. (Air Dry) These can be dried on site in the salvage work area. Open books carefully, interleave with paper towels or clean newsprint every few pages (or where water has seeped in.) Stand on end with pages slightly fanned out. Books should be stood on the head end (i.e., upside down). A toothpick supporting the covers and a wedge of alkaline board placed under the fore edge will prevent sagging of textblocks. Set up fans and dehumidifiers. Keep temperature and humidity low and constant.

g. Damp books. If humidity is high, freezing is indicated. If humidity is low, Air Dry (follow the instructions under section f. Books wet around the edges)

h. Materials with mold: Staff are strongly encouraged to use a HEPA-filter mask and gloves when working around mold. Materials should be dried using Air Dry techniques. (Link: See 5.2 How to Handle Wet Books) Once they are dry, materials can be vacuumed using a HEPA-filtered vacuum. (Link: See 5.6 Mold) Some materials may be too contaminated with mold to be salvaged.

i. Muddy Books:

If books will be frozen:

- Rinse book in clean running water, keeping book closed.
- Gently squeeze excess water
- Wrap every other book in wax paper
- Label box or crate with condition and storage location
- Deliver box to the freeze dry company

If books will be air-dried:

- Do not remove mud
- Follow Air Dry Steps Link (Section 5.2 How to Handle Wet Books)
- When books are dry, brush off dry mud

11. If necessary, arrange to have the disaster and salvage areas cleaned/fumigated through Business Services

## **5.1 Minor Flood Involving Less Than 500 Books**

The most effective treatment is to Air Dry materials using fans, and dehumidifiers with constant low temperatures and humidity. After contacting the appropriate personnel, see Section 5.2 How To Handle Wet Books.

## **5.2 How to Handle Wet Books**

Air Dry Technique:

1. In a large open, clean space, set up a work area that has a low relative humidity and a low temperature. The heat should be turned off. Set up several circulating fans to accelerate the evaporation and drying process. Use large tables (or a flat area) covered with plastic sheeting for air drying the materials. (Wet books should not touch wood because they will adhere to the varnish.) Have a large supply of paper towels, and alkaline board chips.
2. Carefully place paper towels between the wet pages, interleaving every 30-50 pages. The purpose of the paper towel is to wick the water out of the book. They should extend beyond the books edge allowing for the least amount of damage to the binding.
3. Stand books upside-down, with covers slightly opened. Place a small alkaline board chip under the front edge to prevent sagging of the text block. When half way dry, rotate the book to stand right-side up. Drying time can take from 1 to 7 days.
4. Change and add dry paper towels frequently, interleaving on different pages each time. Wet paper towels should be removed from the work room.
5. Check for signs of mold throughout the entire drying process. Mold starts on the covers and works inwards. Damp books are more susceptible to mold than wet ones.
6. When paper and bindings are dry, remove all paper towels and lay the book flat. Apply weight or place in a book press to regain its shape. If required, the books can be rebound. Random inspection of the water damaged site should be periodically checked for one year for mold growth.
7. In preparing to return the collection to its original location, clean and disinfect the disaster area after the water leak has been repaired and the area is dry. Such cleaning should be done by professionals that understand disinfection methods.

## **5.3 How to Handle Very Wet Books**

Do not open. Send to a freeze dry company:

Align the book along the edge of a table. Gently and firmly apply pressure from your hand along the spine and the foreedge, pushing out excess water. Make sure that there are dry paper towels under the book.

Soaked books already open should remain open. They can be lifted and moved using trays or similar supports

If the cover of the book is bleeding or coming off, remove it and put it in a safe place. In many cases books will need to be rebound

When you have more than a few books to send to a freeze dry company, wrap every other book in wax paper

Pack books, loosely, spine down, in boxes or milk crates

Label each box with the call number range and the condition of the books

Deliver to a freeze dry company (see section: Commercial Recovery Services)

## **5.4 Damp or Wet Documents**

1. Lay documents flat and Air-Dry (See Air Drying Techniques 5.2 How To Handle Wet Books) using paper towels and fans. Lower the temperature and humidity.

2. As documents dry place them under a light weight.

3. Wet paper tears very easily. Handling of unsupported individual sheets should be avoided:

a. When moving individual leaves of paper keep them in their original containers.

b. When moving piles of soaked papers, loose documents, rolled or unsupported items, use support underneath. Individual leaves can be supported on polyester sheets.

c. When moving large quantities of loose leaves, use bread trays or similar devices for support.

## **5.5 Major Flood Involving More Than 500 Books**

When more than 500 books are affected by water, the Library needs to contact outside Vendors to help salvage the materials. There are not enough resources

of staff and space to treat this many volumes on site. Staff will need to prepare the materials for packing and sending to a Commercial Recovery Service.

## 5.6 Packing Materials for Freezing

It is likely that a contractor will be hired to pack the books and deliver them to a freeze dry company for salvage. Staff should work closely with the contractor.

See Commercial Recovery Services – Section 9.4

- Wrap each wet book loosely in freezer paper and place it in a plastic crate spine down.
- During packing, sort material for air-drying, freezing, or special processing
- Record (in summary) what is being removed and label boxes (Number consecutively)
- Pack crates on wooden pallets for transport and load pallets on truck
- Do not use ink for marking
- Wet books are heavy. Containers should be small and not fully packed
- Pack books loosely
- Pack crushed paper at top and on sides, allowing some room for expansion after freezing
- Wrap open books as they are found and place on top of crates/containers one layer deep, side by side, separated by paper from books underneath

## 5.7 Mud and Debris Removal

Materials may be covered with mud or other debris and can be safely washed under the supervision of trained or experienced personnel. The procedure is messy and requires rubber gloves, rubber boots, rubber or plastic aprons, large sponges and several pails or plastic trash containers. A source of running water, hoses, and an area with a drain (or outdoors, if possible) are necessary if large numbers of materials are to be treated.

### Procedures

1. Assemble a team of workers with a knowledgeable supervisor.
2. Set up a series of pails or trash containers with clean water. Hoses are used to keep water overflowing out of each pail.
3. Handling one book at a time as gently as possible and without opening the book, immerse the volume and agitate to rinse off loose particles.
4. Proceed to another pail and remove mud with a sponge and a gentle dabbing action. **DO NOT SCRUB OR ABRASE THE VOLUME.**

5. Give the book a final rinsing in a third container of clean water.
6. Proceed to drying techniques if only a few (300-500) volumes are involved. Otherwise, wrap the volume in freezer paper and load a crate/container halfway (wet books are very heavy) for transport to freezing or mass drying techniques.

## 5.8 Mold

Source for section 5.6: *(Northeast Document Conservation Center) Emergency Salvage of Moldy Books and Paper by Beth Lindblom Patkus, Preservation Consultant Walpole, MA*

- 1. Remove mold residue outdoors rather than in an enclosed space whenever possible.** Be sure to wear protective gear such as a HEPA respirator and gloves. If you must work indoors, use a fume hood with a filter that traps mold or in front of a fan, with the fan blowing contaminated air out a window. Close off the room from other areas of the building (including blocking the air circulation vents).
  - a. Vacuum the mold. Use a vacuum with a HEPA filter which will contain the mold spores. A normal vacuum will simply exhaust the spores out into the air.
  - b. Do not vacuum fragile items directly, since the suction can easily cause damage. Papers can be vacuumed through a plastic screen held down with weights. A brush attachment covered with cheesecloth or screening should be used for books to guard against loss of detached pieces. Boxes can be vacuumed directly. When disposing of vacuum bags or filters, seal them in plastic trash bags and remove them from the building.
  - c. It is also acceptable to clean off mold with a soft brush, but this must be done carefully. Once moldy material is dry and the residue appears powdery, take a soft, wide brush (such as a watercolor wash brush) and lightly brush the powdery mold off the surface of the item. This should be done outside or the mold should be brushed into a vacuum nozzle. Be careful not to rub the mold into the surface, since that will attach it permanently to paper fibers or the cover of a book.
- 2. Dry and thoroughly clean the room(s) where the mold outbreak occurred.** You may do this yourself or hire a company to provide dehumidification and/or cleaning.
  - a. Vacuum shelves and floors with a wet-dry vacuum filled with a fungicide solution such as Lysol, then wipe them down with Lysol or a similar solution. Allow them to dry fully before returning any materials. If a musty odor lingers in the room, open containers of baking soda may help.

b. It is also a good idea to have the HVAC system components (heat-exchange coils, ductwork, etc.) cleaned and disinfected, particularly if you suspect they have caused the problem.

**3. Return materials to the affected area.** Do this ONLY after the area has been thoroughly cleaned AND the cause of the mold outbreak has been identified and dealt with.

**4. Continue to monitor conditions and take steps to avoid additional mold growth.**

a. Take daily readings of temperature and relative humidity, and be sure that the climate is moderate. It is particularly important to keep humidity below 55% to insure that mold will not reappear. Temperature should not exceed 70°F.

b. Check problem areas frequently to insure that there is no new mold growth. Be sure to examine the gutters of books near the endbands and inside the spines.

c. Keep areas where collections are stored and used as clean as possible, since dust and dirt are a source of spores, both active and dormant. Clean floors with a HEPA filter vacuum rather than sweeping, since sweeping scatters dust. House collections in protective enclosures whenever possible to keep them free of dust. Vacuum shelves and the tops of unboxed, shelved books, or clean them with a magnetic wiping cloth.

d. If funds permit, install a multi-stage particulate filtration system in the building or storage area.

e. Keep windows closed to prevent active spores from entering, and prohibit live plants in collection storage or use areas, since these are also a source of spores.

f. Quarantine new acquisitions for a few days, and check them carefully for signs of mold.

g. Avoid storing collections in potentially damp areas or in locations where water accidents are possible. Insure that regular maintenance is carried out on the building to reduce the chance of water emergencies.

**5. Dealing with a major mold outbreak.**

If a large portion of the collection is affected by the mold outbreak, if dangerous species of mold are present, or if the HVAC system and the building itself are also infected with mold, outside assistance will be needed. Particularly in the latter cases, it is essential to make sure that the building is safe for occupancy by staff. There are a variety of companies experienced in working with cultural collections that can assist institutions with recovery.

Most of the disaster recovery companies that provide drying services will also clean surface mold off collections. Conservators or regional conservation centers provide treatment services for individual items with artifactual value.

There are also several disaster recovery companies that specialize in dehumidifying and cleaning of buildings. In the case of a severe infestation of mold and/or an infestation that poses serious health risks to staff, companies specializing in indoor air quality can help to insure that the building is safe for occupancy. In severe cases, fumigation of the affected area may be necessary. Due to the potential for damage, fumigants should not be used directly on or in the presence of collections unless there is no other choice. Fumigation should always be done by a licensed professional.

Spores, active or dormant, are ubiquitous. Although it is impossible to get rid of all the spores, mold growth can be controlled. Most important for mold control is maintaining RH conditions below 55%, or, better, below 45%. Use of protective enclosures, meticulous housekeeping, monitoring of RH and temperature, and a watchful eye are also important. If resources allow, high-level filtration of storage areas, if not of the whole building, is recommended. Protecting library and archival collections from water accidents should be among the highest priorities for any institution. Wet collections must be immediately dried or stabilized by freezing. Moldy materials must be isolated, dried if wet, then cleaned using the strictest precautions.

**Sources of Supplies and Services** – see Section 9.5

## **5.9 Clay-Coated (Glossy) Paper**

Since wet clay-coated paper bonds together (blocks) as it dries and the bonding is irreversible, books printed on this stock should be salvaged first. If necessary, they should remain submerged in clean water to prevent blocking. If only a few volumes are wet they may be air dried as long as every page is interleaved with wax paper, paper towels or blank newsprint. If accomplished quickly freezing can stabilize these materials before other drying methods are employed. However, blocking of pages is always a possibility. Therefore, interleaving is necessary for each page. Vacuum freeze drying is the best method to prevent blocking. Materials should be kept submerged in clean water if they cannot be interleaved immediately.

## **5.10 Microforms, Motion Picture Film, Negatives, Slides**

These should be handled by a processing laboratory. Freezing is undesirable as ice crystals can damage emulsions and film base. These materials should be kept submerged in clean water until reprocessing can be arranged.

## **5.11 Photographs**

Air drying is the preferred method for most photographic materials. Vacuum drying causes blocking and sticking of gelatin layers in stacked photographs. Freeze drying is suggested as the treatment only for documentary photographs mounted in an album which has historical captions of some value. Otherwise, freeze drying should not be attempted, since it causes loss of surface gloss. Moreover, as water sublimates in the freeze drying process, impurities in the water are left behind on the film. A professional drying service is preferred. Otherwise:

- Place the prints in a tray and fill it with cold water.
- Agitate the tray and change the water several times.
- After half an hour (15 minutes if color prints), drain off the water and hang the prints up to air dry.

## **5.12 Audio and Videocassette**

Magnetic tape is basically a short-term storage medium for sound, visual images, and electronic data. Magnetic tape is fairly heat resistant and can withstand temperatures of 200 degrees Fahrenheit for up to one hour without suffering severe damage. Smoke damage also poses few problems and usually only the exposed surfaces require cleaning. Prolonged exposure to water is more serious since it causes leaching of chemicals from the tape. If a back-up copy is available, it is usually better to discard the water-soaked original. Often, however, contamination by water and other substances is mainly confined to the outermost layers of the tape. In this case:

- Wash the exposed edges with clean water and leave the tapes to dry without heating.
- Once dried, fast wind the tape against a felt pad (without contacting the heads) to remove dried foreign matter from the oxide and base surfaces. Little can be done to clean cassettes because most designs do not permit them to be opened up to clean off mud or other contaminants. As a last resort, they may be opened and cleaned as above.
- Once cleaning has been completed, re-record onto a new tape. A decision to retain or discard the original can then be made.

Care must be taken during cleaning to ensure that the tape labels are not lost or put on the wrong tapes. A wax crayon may be used to identify the tapes temporarily while they are being cleaned and dried.

## **5.13 Computer Files and Equipment**

Whatever method of drying is used, salvage will be determined after it is dried. If it works, it was salvaged. Commercial recovery sources can be used in a drying salvage effort.

## 5.14 Phonograph Records

Unfortunately, there is little that can be done to treat abraded and deformed phonograph records. Undamaged records with surface deposits can be washed in a 1% solution of a nonionic wetting agent, such as Kodak Photoflo solution. A soft brush should be used to dislodge carefully any particles. This solution should be thoroughly rinsed off with distilled water. The record should be placed vertically in a rack and left to dry slowly at ambient temperature away from heat and sources of contamination.

N.B.: Shellac, acetate, and vinyl discs should be washed in separate containers.

## 5.15 Advantages and Disadvantages of Various Drying Methods

The five techniques for drying materials are described on the following pages. There are tradeoffs of advantages and disadvantages to each technique. Decisions on methods and procurement of services will be made by the Chief Administrators, Recovery Director, Operations Coordinator, and Subject Specialists of the Disaster Recovery Team.

### 1. Air Drying

- Procedure: items dried by circulating air in a low-temperature, low-humidity space.
- Speed: Days or weeks
- Direct Cost: negligible
- Staff and Labor: high
- Results: swelling, cockling, blocking, inks run, mold threat

### 2. Dehumidification

- Procedure: Large, commercial dehumidifiers installed to dry building, furnishings, and collections on site; i.e., materials are not removed from their location, but best for damp or moderately wet books
- Speed: Varies depending upon extent of damage
- Direct Cost: Varies depending upon extent of damage
- Staff and Labor: low
- Results: limited cockling, if used only on damp items

### 3. Freeze Drying

- Procedure: Items placed in self-defrosting freezer (under 10 degrees Fahrenheit) are frozen, then ice is slowly sublimated
- Speed: weeks or months
- Direct Cost: negligible (if done at home)

- Staff and Labor: moderate
- Results: swelling, blocking

#### 4. Vacuum Thermal Drying

- Procedure: Items placed in chamber; vacuum drawn, heat introduced to melt and/or "boil out" water
- Speed: 4-6 weeks per load
- Direct Cost: \$3-5 per volume
- Staff and Labor: low
- Results: potential swelling, cockling, inks running, blocking, damage to film media.

#### 5. Vacuum Freeze Drying - most popular

- Procedure: Frozen items place in chamber; vacuum drawn, small amount of heat introduced (below 32 degrees Fahrenheit); ice crystals drawn out by sublimation
- Speed: 1-2 weeks per load
- Direct Cost: \$5-7 per volume
- Staff and Labor: low
- Results: leather and vellum may warp; photos may lose gloss

## **Preservation**

# **LIBRARY DISASTER PREPAREDNESS AND RECOVERY PLAN**

## **UNIVERSITY OF VIRGINIA LIBRARY**

### **6.0 Record Keeping**

Careful record keeping in any disaster is essential to hasten recovery. In a major disaster record keeping is all the more important to insure rapid recovery. Photographic documentation may be essential for insurance coverage. It is also helpful as an educational tool for improving disaster preparedness efforts in the future. It is very important to keep a call number list of where all salvaged materials are being kept throughout the recovery operation. This becomes essential when large quantities of materials are removed to off-site freezer storage facilities.

#### **6.1 Sample Log Sheet – follows end of chapter**



## **Preservation**

# **LIBRARY DISASTER PREPAREDNESS AND RECOVERY PLAN**

## **UNIVERSITY OF VIRGINIA LIBRARY**

### **7.0 Post-Disaster Actions**

1. Coordinate building rehabilitation if necessary
2. If needed, investigate procedures to fumigate building or collections
3. Prepare report on operations
4. Conduct follow-up with all personnel involved in salvage and recovery operations
5. Evaluate operation
6. Modify disaster plan as needed
7. Provide additional training as needed
8. Inventory supplies and order replacements immediately
9. Update lists of suppliers if necessary
10. Write letters of appreciation for suppliers of equipment and services
11. Assist Risk Management in preparation of report
12. Monitor affected collections on a regular basis

# Preservation

## LIBRARY DISASTER PREPAREDNESS AND RECOVERY PLAN

### UNIVERSITY OF VIRGINIA LIBRARY

#### 8.0 Making the Plan Work

It is necessary to review the disaster plan often because there is a lot of information on the subject, and sometimes there is conflicting information about the contents of a disaster preparedness plan.

#### 8.1 Distribution of the Plan

1. All key personnel and unit representatives (Quick Response Team members) have a copy of the plan and are updated of any significant changes to the plan. QRT meets once a year to review the plan.
2. Extra copies of the plan are kept at each branch library along with immediate response disaster supplies (react packs). Copies of the plan should be kept in a waterproof container with the supplies.
3. Additional copies of the plan are given to key personnel for safe off-site access.
4. Copies of the plan should be distributed to key agencies outside of the Library: Facilities Management, Risk Management, Fire Safety Officer, and the Fire Department.

#### 8.2 Training and Orientation

1. New employees should become familiar with the plan as a part of their orientation.
2. Each unit has one staff member that is part of the Quick Response Team.
3. Key personnel and unit representatives (QRT) meet once a year to review the plan, debrief each other on any recovery incidents and continue to be trained in disaster recovery. (Ex: use of fire extinguisher, meetings with the Fire Department, simulated disaster and recovery operation, etc.)

#### 8.3 Updating the Plan

Several activities should be pursued to insure that the plan reflects current information. For the most part, the Preservation Coordinator will be responsible for maintaining a current plan.

Updating activities include:

- adding new information about disaster recovery as it becomes available.
- modification of the plan as a result of any disaster experience
- inventory of disaster preparedness supplies
- review of the communication mechanisms and verification of staff as well as telephone numbers
- review of supply sources with a double-check of supply and service availability.

# Preservation

## LIBRARY DISASTER PREPAREDNESS AND RECOVERY PLAN

### UNIVERSITY OF VIRGINIA LIBRARY

#### 9.0 Resources

#### 9.1 Supplies

#### 9.2 Supplies Group A

#### 9.3 Supplies Group B

#### 9.4 Commercial Recovery Services

#### 9.5 Other Services

#### 9.6 Consultants

### 9.0 Resources

Resources include supplies, equipment, commercial services and consultants for response to a disaster. The following sections provide information about these resources.

### 9.1 Supplies

Supplies for rapid response to a disaster are grouped into two categories. Group A supplies should be on-hand and available at a moment's notice. Redundancy through several locations insures that the most essential supplies will be available quickly. Group B (Section 13.3) includes supplies which can be obtained by Business Services on an emergency basis through purchase, from other library units, or through Facilities Management.

### 9.2 Supplies - Group A

Alderman, Education, Fine Arts, Music, and Science and Engineering Libraries should stock Group A items in a locked area WITH MEANS OF ACCESS (i.e., KEYS) CLEARLY UNDERSTOOD BY STAFF AT ALL HOURS. Location of keys should be noted on floor plans for each library.

#### GROUP A SUPPLIES

plastic sheeting  
paper towels  
blank newsprint  
plastic, large, heavy-duty trash bags

small plastic bags or Ziploc bags  
duct tape  
scissors  
multi-cell flashlight with batteries  
clip boards, pens, pads, and log sheets  
wax crayons  
rubber gloves and boots  
freezer paper  
wax paper  
first-aid kit  
tooth picks  
small chips of alkaline board  
Rescue package  
extra copy of Disaster Preparedness and Recovery Plan in a waterproof enclosure

### **9.3 Supplies - Group B**

These should be stored in Alderman Library or procured on an emergency basis from other library units, or Business Services (and Facilities Management).

Any supply item in Group A  
book trucks  
fans  
dehumidifiers  
wet/dry vacuums  
Rescubes (polyethylene containers which can be stored flat) or milk crates  
electric fans  
heavy duty extension cords (3 prong, grounded)  
large plastic trash containers  
plastic buckets  
wooden pallets  
portable pump  
portable generator  
portable lighting  
mops & buckets  
large sponges  
Nylon/plastic clothes lines  
plastic clothes pins  
distilled water  
rubber/water proof aprons  
3 mil polyester (Mylar)  
Kodak Photoflo solution  
freezer trucks  
hoses

alcohol  
filter masks

## 9.4 Commercial Recovery Services

Airdex Corporation  
1525 North Post Oak Road  
Houston, Texas 77055  
(713) 688-8270

Contact persons: Don Hartsell, Jim Leavens

**Services: "Airdex Bibliotherapy Services;" mobil refrigerant dehumidification systems, portable drying and freezing chambers, on-site drying for buildings and their contents**

American Freeze-Dry, Inc.  
411 White Horse Pike  
Audobon, New Jersey  
(609) 546-0777

Contact person: John Magill

**Services: Freeze drying, frozen storage, plastic milk crates (if no other source of supply); by arrangement: refrigerated trucks, fumigation, smoke odor removal, cleaning. Annual service contract available (i.e., a "freeze-drying insurance policy")**

BMS-CAT  
(Blackmon Mooring Steamatic Catastrophe, Inc.)  
One Summit Avenue  
Suite 202  
Fort Worth, Texas 76102  
800-433-2940 or (817) 926-5296  
Contact person: Pat Williams Moore

**Services: Thermal vacuum drying, limited vacuum freeze drying capacity, soot and smoke odor removal, fumigation, inventory, boxing, and transportation of materials; document reproduction-microforms, floppy disks; transport to their plant or on-site**

Document Reprocessors  
41 Sutter Street  
Suite 1120  
San Francisco, California 94104  
800-4-DRYING [800-437-9464] or (415) 362-1290  
Contact Person: Eric Lundquist

**Services: Vacuum freeze drying; by arrangement: freezer storage, inventory of materials, smoke odor removal, cleaning of materials, fumigation, rebinding, restoration, reshelving. Mobil drying chambers can be transported to a disaster site by truck, train, air plane, or ship, Capacity**

**up to 640 cubic feet (approximately 10,000 books or 13 million documents).  
Drying in 7-17 days.**

Moisture Control Services  
A Division of Cargocaire (Headquarters)  
79 Monroe Street  
Amesbury, Massachusetts 01913  
(617) 388-0600  
nearest office: Rockaway, New Jersey  
Contact person: Ron Chamberlain (201) 625-7458

**Services: Dehumidification, building moisture removal, water pumping,  
water vacuuming, off-site air drying in controlled environment chamber**

## **9.5 Other Service and Supply Sources**

This list is not exhaustive, nor does it constitute an endorsement of the suppliers and services listed. We suggest that you obtain information from a number of vendors so that you can make comparisons of cost and assess the full range of available products and services.

A more complete list of suppliers is available from NEDCC. Consult the Technical Leaflets section of NEDCC's website at [www.nedcc.org](http://www.nedcc.org) or contact NEDCC for the most up-to-date version in print.

If not on hand, supplies, equipment, and services should be procured through Business Services. If it is not possible, the following supply sources can be used.

- Dehumidification, cleaning of interiors  
Munters Moisture Control Services  
79 Monroe Street  
Amesbury, MA 01913  
Toll-Free: (800) 686-8377 (24-hr.)  
Telephone: (978) 388-4900  
Fax: (978) 241-1215  
Contact: James Gilbert  
<http://www.muntersmcs.com>
- Film Reprocessing:  
Eastman Kodak Company  
B.I.S. Lab  
1331 Business Center Drive  
Mount Prospect, Illinois 60065  
(321) 635-5957  
Emergency Help line: 900-EKC-TEST [800-352-8378]  
Can provide information and referral for film reprocessing.

- Freezer Space:  
Dining Services Division (UVa)  
Administrative Office  
P. O. Box 9020  
Charlottesville, Virginia 22906  
922-5110  
Contacts: John Darmstadt (Regional District Manager), John Iacunato (Senior Dining Services Director)  
Some freezer space may be available.
- Freezer Trucks:  
McDonnell Douglas Truck Service  
2210 Magnolia Street  
Richmond, Virginia  
(804) 644-6464  
Truck rental office open 7:00 a.m. to 8:30 p.m. Road service answers on off-hours and provides information on truck availability.
- Hardware & Equipment:  
Lowe's  
Route 29 North  
Charlottesville, Virginia  
973-5056
- HEPA filter vacuums  
Nilfisk-Advance of America  
300 Technology Drive  
Malvern, PA 19355  
Toll Free: (800) NILFISK or  
Toll Free: (800) 645-3475  
<http://www.pa.nilfisk-advance.com>
- Industry trade group established by parties with an interest in ethylene oxide sterilization. A place to start if a company specializing in ETO fumigation is needed.  
Ethylene Oxide Sterilization Association  
1815 H Street NW, Suite 500  
Washington, DC 20006  
Telephone: (202) 296-6300  
Fax: (202) 775-5929  
E-mail: [info@eosa.org](mailto:info@eosa.org)  
<http://www.eosa.org>
- Janitorial Supplies & Equipment:  
Charlottesville Sanitary Supply Corporation  
13 27 East High Street

Charlottesville, Virginia  
296-8131

- Milk Crates:  
May be available at local hardware and department stores.

Protext (React Packs)  
3515 Leland Street  
Bethesda, Maryland 20815  
(301)718-1659  
Contact person: Linda Nainis  
Provides RES CUBES - corrugated high density polyethylene containers  
which can be stored flat.

Shenandoah's Pride Dairy  
P.O. Box 77  
Mill Creek Business Park

Avon Street Extended  
Charlottesville, Virginia  
295-5123  
Contact person: Lawrence Burruss  
"100 or so" milk crates may be available.

- Respirators  
Sigma-Aldrich Corporation  
1001 West St. Paul Avenue  
Milwaukee, WI 53233  
Toll Free: (800) 558-9160 (within USA)  
Telephone: (414) 273-3850  
Toll Free Fax: (800) 962-9591 (within USA)  
Fax: (414) 273-4979  
[http://www.sigmaaldrich.com/Brands/Fine\\_Chemicals.html](http://www.sigmaaldrich.com/Brands/Fine_Chemicals.html)
- Respirators, HEPA filter vacuums  
Lab Safety Supply  
P.O. Box 1368  
Janesville, WI 53547-1368  
Toll Free: (800) 356-0783  
Fax: (800) 543-9910  
<http://www.labsafety.com>
- Soot & Smoke Odor Removal:  
Re-Oda Chem Engineering Company  
100 Industrial Parkway  
Chagrin Falls, Ohio 44022  
(216)247-4131

"Booksave" oxidizing process. N.B.: Oxidation is a known cause of paper deterioration and, therefore, unsuitable for special collections and "valuable" material.

- Vacuum freeze drying, cleaning of collections  
American Freeze-Dry, Inc.  
39 Lindsey Avenue  
Runnemede, NJ 08078  
Telephone: (856) 546-0777  
Contact: John M. Zioance  
Hours: 9:00 a.m. - 5:00 p.m. M-F
- Vacuum freeze drying, cleaning of collections, cleaning of interiors  
BMS Catastrophe  
303 Arthur Street  
Fort Worth, TX 76107  
Toll Free: (800) 433-2940  
Telephone: (817) 332-2770  
Fax: (817) 332-6728  
<http://www.bmscat.com>
- Vacuum freeze drying, cleaning of collections, dehumidification  
Disaster Recovery Services, Inc.  
2425 Blue Smoke Court South  
Fort Worth, TX 76105  
Toll Free: (800) 856-3333  
Telephone: (817) 535-6793  
Fax: (817) 536-1167
- Vacuum freeze drying, cleaning of collections  
Document Reprocessors  
5611 Water Street  
Middlesex, NY 14507  
Telephone: (888) 437-9464  
Telephone: (716) 554-4500  
Fax: (716) 554-4114  
<http://www.documentreprocessors.com>
- Web resource specializing in the indoor environment and indoor air quality. Provides a list of companies that specialize in indoor air quality products and services.  
EnviroCenter  
<http://envirocenter.com>

## 9.6 Consultants

In general, the Preservation Supervisor and other experienced personnel, especially in Special Collections, should be able to answer most questions about salvage. If not, or if not available, other sources are listed below.

Conservation Center for Art and Historic Artifacts (CCAHA)  
264 South 23rd Street  
Philadelphia, Pennsylvania  
(215) 545-0613  
Contact person: Glen Ruzicka

Information Conservation, Inc.  
Conservation Division  
6204 Corporate Park Drive  
Brown Summit, North Carolina 27214  
(919) 375-1102  
Contact person: Don Etherington

Library of Congress  
National Preservation Office  
LM-GO7  
Washington, D.C. 20540  
(202) 707-1840  
Contact persons: Merrily Smith, Debra McKern

Northeast Document Conservation Center (NEDCC)  
100 Brickstone Square  
Andover, Massachusetts 01810-1428  
(508) 470-1010  
Contact person: Karen Motylewski

SOLINET  
1438 West Peachtree Street, N.W.  
Suite 200  
Atlanta, Georgia 30309-2955  
800-999-8558 or (404) 892-0943  
Contact person: Julie Arnott