

**MODEL  
DISASTER RECOVERY PLAN  
FOR  
VITAL RECORDS**

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This model plan explains disaster prevention planning for records, the importance of creating an inventory of vital records, and how to respond and recover records following a disaster. It will be necessary to tailor the plan to your individual city or organization.

Disaster prevention planning and recovery will prepare the organization to handle an emergency with minimal interruption. Records containing information necessary to restore city operations must be protected.

**Records inventory** - Creating a records inventory (location/description/classification of records) is essential for:

1. prevention planning - allows city staff to review a physical list and consider preservation of vital records (whether there is another copy available off site; whether the records are in the safest location of the facility, etc); and
2. responding to a disaster – allows city staff to recover vital records in an expeditious manner following a disaster. The inventory will be used to recover records according to priority classification (vital, important, useful, non-essential).

There are four main classifications of records:

- Non-essential Records - This type of record is listed on a records retention schedule for routine destruction in accordance with statewide guidelines. Loss of these records presents no obstacle whatsoever to restoring daily business.
- Useful Records - These are records that, if lost, might cause some inconvenience but could be easily replaced. Loss of these records does not present any real obstacle to restoring daily operations.
- Important Records - This category of records, although replaceable, is reproduced only at considerable expense of funds, time and labor. Loss presents a lot of aggravation but is not insurmountable.
- Vital Records - These records are irreplaceable (copies do not have the same value as the originals). They are essential to the continuity of services during a calamity or the restoration of daily business if it has been interrupted.
- Some examples of vital records include the current, regularly updated information needed for daily activities such as accounts receivable; master personnel listings; irreplaceable research or developmental data; original signed copies of major contracts or agreements, including change orders and amendments; and insurance policy information.

Other types of vital records are the ordinances, resolutions, and minutes of local governing bodies. These records are considered vital because they establish the policies that direct the organization's operation.

The three most commonly used ways to secure vital records are duplication and dispersal, on-site storage, and off-site storage. Estimating the severity of a calamity that could destroy a local government's records is a basic step in determining appropriate protection measures for vital records. This projection, along with an examination of costs of protection methods and budgetary levels, provides a basis for choosing options.

A sample records inventory is shown on the next two pages.

RECORDS INVENTORY (City of New Hope)  
9-4-01

Location – City Hall	Description	Classification
Upper Level: Central Files	Subject Files of Council Action Current year agenda packets Official contracts Historical information (parks) Official budgets	Useful Vital Vital Vital Vital
Upper Level: Shelving unit by City Clerk's office	Current year minute books Affidavits of publication Statute books	Vital (copy stored on computer network) Non-essential Non-essential
Upper Level: Files in offices	Working files	Useful
Upper Level: City Clerk's office	Abstracts of Elections (3-ring binder) Official Code Book Vehicle Titles Keys to city owned equipment and real estate	Vital Vital (electronic version available) Important Important
Upper Level: Central Stores	Blueprints of residential/commercial properties	Important
Upper Level: Administrative Coordinator Office	Personnel Files	Vital
Upper Level: Payroll Clerk's Cubicle	Payroll records	Most information is backed up on computer but certain documents are classified as vital (i.e. W-4s, insurance elections)
Upper Level: IT Coordinator's Cubicle	Computer registrations/licenses Safe: Back-up tapes of Network Cabinet in hallway - computer software	Important Vital Important
Upper Level: Computer Server Room	Network File Server Contents of file server is backed up nightly (5 week cycle); also retain month-end tapes for one year.	Vital

Records Inventory Continued

Upper Level: Improvement Project Files – two locations (Administration and Comm. Dev.)	Improvement Project information	Important
Upper Level: Community Development	Address Files in Rotary File	Vital
Upper Level: Parks and Recreation	Subject Files – programs Project files and plans Class registration forms	Important Non-essential (duplicates in other depts.) Non-essential (info maintained on computer)
Lower Level: Police Department	Case Files in Rotary File Case Files in storage room by lunchrm Case Files in archive room Evidence Items Data-max server (state of MN); link to Hennepin County	Vital Vital Vital Vital Useful
Lower Level: Files in offices	Working files Investigative files	Non-vital Vital
Lower Level: Archive Room	Storage of inactive files 3-ring binders on shelving unit (minutes, ordinances, resolutions) Final Plats (plats cabinet)	Combination of Vital and Important Vital Important
<b>Location – Public Works</b>	<b>Description</b>	<b>Classification</b>
Main Office	Address Files	
Main Office	Improvement Project Files	Useful (official copy at City Hall)
Main Office	As Built (cabinets); original sewer, water, storm water system.	Vital
Upstairs	Plat maps	Useful (duplicate at City Hall)
<b>Location – Golf Course</b>	<b>Description</b>	<b>Classification</b>
Superintendent's Office	Annual Summary of Rounds and Cash General information	Useful Non-essential (duplicate at City Hall P&R)
<b>Location – Ice Arena</b>	<b>Description</b>	<b>Classification</b>
Manager's Office	General information	Non-essential (duplicate at City Hall P&R)

There are several possible types of disasters that could damage records:

Biological: Major outbreaks of insects, rodents and mold growth.

Fire: Fire damage creates a combination of problems. Water damage usually ensues, along with smoke and major structural damage.

Power Failure: Loss of electricity, heating, cooling, and humidification.

Vandalism: Defacement of materials, theft, and other acts of vandalism.

Water: Water damage is the most likely disaster to occur. There are many sources for water damage: Leaking roofs or pipes, backed up plumbing, malfunctioning HVAC equipment, and inclement weather.

Manmade disasters can often be prevented by routine inspections of a facility. Temperature and humidity should, ideally, be maintained at a constant temperature (65 to 70 degrees Fahrenheit, 45 to 50% relative humidity for paper). Vital records, those essential to the continued operation of an entity in case of emergency, require the safest and most secure storage area possible. If possible, store vital records in a building separate from the office operation. Copies of microfilm should also be kept at a separate location. Cleaning and spraying for insects and rodents should be performed on a regular basis. Materials should be properly stored and protected from dirt, dust and light. Ultraviolet filters should be placed over florescent lights and on windows. Leaky pipes, frayed electrical wires, unattended machinery, open windows and structural damage can result in unnecessary destruction of materials. Aisles and work areas should be kept free of debris.

Equipment should be turned off when not in use. Rules regarding food and beverages, and unauthorized access should be established and enforced. Security checks should be made at closing time to ensure all exits and windows are locked, all equipment has been turned off or unplugged, all lights and water faucets are off, and no unauthorized personnel are in the building. These routine steps can prevent some types of disasters. However, with many public buildings it is difficult to check all the offices for unauthorized personnel. If you are working outside of regular business hours, be sure to lock doors behind you while in City buildings, and maintain an awareness of other people in the building when you leave.

Be aware of all hazards and situations that have the potential for causing damage and correct them before they develop into disasters. Staff members should all be familiar with the layout of the building where they work and of possible danger areas. They should know the location of all fire extinguishers and alarms and how to operate them. Fire exits and alternate escape routes should be clearly marked. Evacuation procedures should be established and practiced regularly.

Determine the chain of command and whether your department or the Police Department will be responsible for security during the records recovery process.

Develop a list of home and work phone numbers of personnel who should be contacted if a disaster event causes damage or poses a threat to City records. This list could include the City Manager, City Clerk, IT Coordinator, and Department Heads. This list may already be available as part of the city's emergency operation plan.

### **PROFESSIONAL DOCUMENT RECOVERY SERVICE**

Your organization may wish to create an open account with a professional document recovery service company. There is no cost involved, but you would receive priority in a natural disaster

event. There are many pricing variables (whether customer supplies labor force, etc). One document recovery service provider is Munters Corporation located in Burnsville, Minnesota (1-800-422-6379). Their rates for year 2001 are as follows:

Document drying - Customer site \$78 to \$105/cubic foot (depending on quantity)

Document drying - Munter facility \$52 to \$70/cubic foot (depending on quantity)

Munters also provides services for cold storage and document restoration (located in Burnsville, Minnesota - 1-800-422-6379).

### **DAMAGE ASSESSMENT TEAM OVERVIEW**

It is the task of the assessment team (City Clerk and designees) to estimate the extent of damage, identify the types of affected records, and to establish initial priorities for recovering damaged items.

The assessment team(s) should consist of people who are most knowledgeable about the records. Damage should be documented as it is discovered since this may be important later for insurance and legal reasons (photographs or videotape may be helpful).

It is extremely crucial to immediately assess the extent of damaged material and enlist the assistance of in-house or outside experts (professional document recovery service company such as Munters Corporation).

### **DAMAGE ASSESSMENT TEAM ACTION**

The assessment team should describe the scope of the problem in broad terms. Quantity should be expressed in terms of linear feet or other relevant units (i.e. storage boxes). Unless the problem is quite small, an item by item count is not necessary at this time. Refer to the "records inventory" to determine record classification.

The immediate external appearance of the records may be indicative of the degree of damage, as in the case of water soaked materials in aisles, or deceptive where storage containers are damaged and the contents relatively unharmed. Shelves and cabinets will contain materials damaged to different and varying degrees depending on the nature of the disaster: Soaked, partially wet, damp, charred, smoke-damaged, debris-covered, etc. The damage to collection materials should be appraised without handling whenever possible, as further irreparable damage may result. A realistic and thorough assessment must be made as quickly, efficiently, and safely as possible.

In addition to locating, categorizing and quantifying the damage to the collection, a major responsibility of the team is to determine the significance of the affected material. Refer to the "records inventory" on previous pages for the classification of records. Also, consider the following to determine significance of records:

1. How important the item is to the City's operation
2. Whether the item represents historical value
3. Whether the City has a legal obligation to preserve the record
4. Whether the item (copy) is available elsewhere

Time is a crucial element in the assessment, and decisions will need to be made quickly. If the damage involves wet records and the recovery process is to be handled in-house, follow instructions listed on pages 13-16 (Standard Procedures for Salvaging Water Damaged Records).

## **INSURANCE**

The plan should include insurance information (contact person and phone number). Many cities are insured through the League of Minnesota Cities (651-281-1200). The appropriate employee should notify the city's agent if a facility sustains damage.

## **DAMAGE RECOVERY TEAM OVERVIEW**

In-house disaster recovery team(s) may be created to perform salvage activities under the supervision of the City Clerk. Recovery teams will be responsible for separating records and other material to be salvaged, moving material to be recovered from affected areas to work or other storage spaces when necessary, beginning to dry wet materials, and packing material that will require shipment to another facility.

## **DAMAGE RECOVERY TEAM ACTION**

Most disasters tend to occur when a building is unoccupied, during the early morning hours, on weekends, or during holiday closings. If there is a major disaster, **DO NOT** enter the building until it has been declared safe to do so by the Building Official or the Fire or Police department. Ninety-five percent of all disasters will result in water-damaged materials. Mold will develop within forty-eight to seventy-two hours in a warm, humid environment. It is necessary to work quickly to salvage damaged materials and to prevent additional damage from occurring.

During records recovery, confidentiality must be maintained. Police Department staff should handle arrest files, items classified as evidence, and other sensitive records. Personnel files should be handled only by the Director of Administration or the Administrative Coordinator. The Recovery Team leader(s) will coordinate with the Finance Department regarding emergency expenditures and contracts, and to ensure that correct records are kept for insurance claims.

**Stabilize environment** - It is necessary to stabilize the temperature and relative humidity as soon as possible. If records are wet, mold can grow on records within 48 hours of damage. To reduce mold growth, leave lights on and create air movement. Immediately air dry or freeze wet records to prevent further damage and growth.

**Purchasing** - A record of all purchases must be maintained. Though it is best to follow established contracting and purchasing procedures, this may not always be possible in an emergency.

Expenditures for emergency repairs, supplies, equipment rental, or other purchases should be made when authorized by the City Manager.

The following two pages list possible supplies, vendors, and service providers to utilize during the damage recovery process.



## Supplies and Vendors

Item	Possible Vendor	Phone
Blotting Paper (white)	Uni-Source 6100 West Broadway Brooklyn Park, MN 55428	763-536-5600
Boxes	Office supplies vendor	
Buckets, sponges, mops, brooms	Discount or hardware store	
Camera, film	Photo lab or discount store	
Copy paper, plain white	Office supplies vendor	
Dehumidifier, portable	United Rental	651-488-7277
Disinfectant (lysol, bleach)	Discount store	
Environmental Monitoring Equipment	Weatherama Weather Instruments	612-432-4315
Extension cords	Hardware store	
Fans	United Rental	651-488-7277
Freezer	Local schools (if during summer months), meat plant, ice arena, cold storage companies, grocery stores, or refrigeration trucks	
Freezer paper	Paper supply company	
Generator	Sears	
Milk Crates, plastic	Schroeder Milk & Ice Cream Co. (will loan free)	651-487-1471 651-487-1474
Newsprint (unprinted)	Uni-source	612-536-5600
Pallets	Uni-source	612-536-5600
Paper Towels	Office supplies vendor or discount store	
Plastic Bags	Hardware store or discount store	
Plastic Sheeting	Hardware store	
Pumps (for water removal)	Rental company	
Rubber Gloves	Discount store	
Soot Removal Sponges	The Quality Rubber Co. PO Box 71 Sedalia , MO 65302-0071	1-800-597-9947
Tables (for work space)	Rental company	
Wet/dry Vacuum	Rental company	
Wood	Building supply or lumber yard	

## Services

Service	Possible Vendor	Phone
Audio-tape Duplication	Precision Tapes, Inc (Minneapolis, MN)	612-333-9111
Cleaning Services	Marsden Bldg. Maint. Co. (St. Paul, MN)	651-641-1717
Computer Data Recovery/ Computer Hardware Recovery	Ontrack Data Recovery (Eden Prairie, MN) BMS Catastrophe, Inc. (Fort Worth, Texas)	612-937-1107  1-800-433-2940
Copy Machine Repairs	Local maintenance company	
Dehumidification Services (on-site)	DryTech, Inc. (St. Paul) Moisture Control Services (Burnsville, MN)	651-631-8419 952-831-9418
Freeze Drying	HazTran Inc. (Grand Rapids, MN)	1-800-325-5578
Freezer Space	Bell Cold Storage (St. Paul, MN) Able Cold Storage (Newport, MN)	651-227-0741  651-459-6372
Fumigation	Adam's Pest Control (Hamel, MN)	612-478-9810
Humidification	Schwab-Vollhaber-Lubratt, Inc. (Shoreview, MN)	651-481-8000
Locksmith	Local locksmith	
Maps/Oversized Paper Conservation	Allan Thenen (St. Paul, MN)	651-690-5897
Microfilm Readers & Printers Repair	Abaci, Inc. (St. Paul, MN)	651-292-0929
Microfilm Reprocessing and Recovery	3M - 3M Center (St. Paul, MN)	651-733-1110
Movers	Barrett Moving & Storage Co. (Eden Prairie, MN)	952-944-6550
Photograph Conservators	Chicago Historical Society (Chicago, IL)	312-642-5035
Smoke Deodorizing	Document Reprocessors (Middlesex, NY)	1-800-437-9464
Truck, Refrigerator	Able Cold Storage (St. Paul, MN) Ryder Truck Rental (local)	651-459-6372  1-800-328-0085
Vacuum Freeze Drying	American Freeze-Dry (Audubon, NJ) Midwest Freeze-Dry (Skokie, IL)	856-546-0777  847-679-4756

**Recordkeeping** - The damage recovery team leader will assign at least one team member to document records transactions. Recordkeeping should include inventories and dates of discarded materials and when items are sent out of the building (commercial cold-storage or freeze-drying facilities), to off-site storage, or to off-site companies for treatment. Other essential information includes: Items frozen, treated, or dried in-house; items relocated within the facility, and items in need of additional attention.

Depending upon workload, an additional person may be assigned to label individual items, relabel boxes, or label boxes ready for shipment.

**Restore the Area** - After the damaged items have been removed and the environment has been stabilized, the area must be thoroughly cleaned. Walls, floors, ceilings, and all furniture and equipment must be scrubbed with soap and water and a fungicide. Carpeting, and especially the padding under it, should be carefully examined, as mold will develop rapidly. Removal of smoke odor and fogging with fungicides or insecticides should be performed only by professionals.

### **FOLLOW UP ASSESSMENT**

A written report should be prepared after disaster recovery to assess the disaster response. The report will note the effectiveness of the plan and include evaluations of all sources of supplies and equipment and all off-site facilities used. Ask such questions as:

- Could we limit or avoid the damage if a similar disaster struck again?
- Was the insurance coverage adequate?
- Do we need to revise the records management program to minimize future losses?
- Do we have the information and supplies to deal with future emergencies?
- What aspects of the disaster plan need to be modified
- What additional training is necessary for staff?

The plan should be modified periodically as information becomes available from other local governments that have experienced disasters. The plan should also be revised to reflect the changing locations of vital information and staff relocations.

## Floor Plan

(attach building floor plans illustrating areas of records, exits, and fire extinguisher locations)

## **Standard Procedures for Salvaging Water Damaged Records**

Stabilize the environment! Mold will begin to develop within 24-48 hours! Reduce the temperature to 50-60 degrees, and reduce the humidity (the less the better). This will help remove moisture from your records, as well as help the building where the disaster occurred.

A number of options are available for treating water-damaged materials. The choice of treatment will depend upon the extent and type of damage incurred, and the manpower, expertise, and facilities available. If drying cannot begin within 24 hours, prepare and pack the records for freezing.

### **OPTIONS:**

#### **I. VACUUM FREEZE DRYING**

Vacuum freeze drying is the safest and most successful method, although it is also the most expensive. Materials must be frozen when they are placed in a sublimation chamber. This type of chamber operates under high vacuum and high heat, and turns the ice crystals in and on the frozen materials to water vapor. The vapor is then collected on a cold panel and has been chilled to at least minus 200 degrees Fahrenheit, so it cannot go back on the material. If they are not frozen when they are put in the chamber, the materials will freeze on the outside and the water molecules on the inside will be forced through the frozen barrier as the vacuum is pulled. This action can cause books or documents to “explode.”

When materials are removed from the vacuum freeze chamber, they will be very dry and should acclimate for at least one month before they are handled to avoid cracking the spine and/or binding of bound materials (this is especially true for leather bindings). They may be placed in a high humidity room to accelerate the acclimation process, but must be monitored closely for signs of mold.

Materials so treated will not look like new, but will show signs of swelling and distortion. Some people report that as much as 12% more space is needed to house bound materials. Photographs will not be damaged by this treatment, but rubber cement may dissolve and stain the pages to which it has been applied.

#### **II. VACUUM DRYING**

Vacuum drying involves the placement of wet materials in a chamber that pulls the moisture by means of a vacuum. This method is not recommended as the heat involved is damaging to paper (especially bound paper) and photographic materials. Microwave ovens should not be used for the same reason.

#### **III. FREEZING**

Freezing wet materials will stabilize them and provide you with time to determine your course of action. Mold will not grow and further deterioration from water will not occur when materials are in a frozen state. Books have been left in a freezer for ten years and successfully thawed and air-dried with no resultant damage. Freezing will also help to eliminate smoke odor from materials.

Rapid freezing is recommended to minimize damage from ice crystals (the faster the materials are frozen, the smaller the ice crystals will be). Temperatures below 15

degrees Fahrenheit will freeze and dry out wet materials. If freezer space is not immediately available, and the outside temperature is below 15 degrees Fahrenheit, place the materials in a secure area outside. Cover them with plastic if rain or snow is expected.

Freezing is an intermediate stage. After materials have been removed from the freezer, they must be placed in a vacuum freeze dryer or air-dried.

#### **IV. AIR-DRYING**

Air-drying should be performed only in a stable environment to inhibit the growth of mold. The ideal environment for air-drying is 50 – 60 degrees Fahrenheit and 25 to 35% relative humidity.

Immediately remove wet collections from any type of storage unit to prevent further damage. Wet record collections that are stored on shelves or filing cabinets can double or triple in size by swelling up when the water is absorbed into the paper. This can distort and bend the cabinet or shelving, making it even more difficult to remove the documents to dry them. If drying cannot begin within 24 hours, prepare and pack the records for freezing by placing the records in plastic milk crates or storage boxes that have been lined with inexpensive plastic garbage bags.

All records that are removed should be inventoried (written down). Information such as the record name/title, dates, what location the record was taken from, and other information that is used to label for storage should be written down and kept with any record that is removed. Handwritten labels can be put on the boxes or milk crates as to what the contents are. A blank sheet of paper with a hand written label on it can be kept with individual records if they are to be spread out and dried on site.

##### **Air Drying Non-Coated Paper:**

*If documents are soaking wet:*

Very carefully, lift approximately a 1” stack of the wet documents. If the wet documents are very fragile use a sturdy board of some sort and a paint stick/stirrer to assist you in picking them up. Gently use the paint stick to help lift and guide the wet document onto the board. Once you have a document on the board you can turn it over onto a piece of absorbent paper such as non-printed newsprint or plain white copy paper. Discard any type of folders that have been damaged. Folders do not dry well, and can be replaced easily. Write down any indexing or title information from the tab of the folder, so another one can be prepared.

Place wet document on top of absorbent paper. Place another sheet of absorbent paper on top of it. If possible, insert absorbent paper in between the wet documents at different intervals within the stack. Replace absorbent paper about every half hour; this helps to speed up drying.

Once the documents are no longer wet but cool to the touch, place them on a solid surface. Put a slight even weight on the entire surface of the document. This will help to minimize the distortion. Continue to change the absorbent paper. Do this until the document is totally dry. Keep in an area where the climate is stable and the air is circulating. Remember, you will still need to check periodically for one year to see if mold is growing.

Transfer records to the drying area as if you are **packing them for freezing**; if time allows, wrap approximately a 1” stack loosely with absorbent paper and place flat in a

plastic milk crate or clean, dry records storage box that has been lined with an inexpensive plastic garbage bag. Do not pack the box or crate tightly, and do not pack all the way up to the top of the box or crate. Wet records can expand, even when freezing.

**Drying Area:** Take documents to a secured drying area, be it on the floor or tables. Prepare the area to be used by placing plastic sheeting down, then a layer of absorbent paper. Make sure there is air circulating in the area. Place fans at various points to keep the air circulating in the drying area. DO NOT have the fans pointing at the records that are drying. Make sure the humidity and the climate of the building (or at least in the area to be used for drying) have been stabilized to prevent development of mold.

*If papers are damp or only slightly wet:*

The same procedure as above can be used, or documents can be hung from a clothesline providing that the documents are stable enough to do so without causing further damage.

**Air Drying Coated Paper Records:**

*If documents are damp:*

Separate immediately into individual sheets and follow drying procedures for regular paper (see above).

*If documents are soaking wet:*

**Do not try to separate or dry.** Pack for freezing. This type of paper cannot be air dried after being soaked; it will stick together as it dries. Wrap approximately a ½" - 1" stack loosely with the absorbent paper and place flat in a plastic milk crate or clean, dry records storage box. Transfer to freezer storage as soon as possible to prevent mold development.

**Air Drying Books or Bound Material:**

First and foremost - DO NOT close a book that is open and wet. Also, DO NOT try to clean an open book.

If books have glossy pages/paper, and are more than just a little damp - DO NOT try to air-dry. Pages will stick together. Prepare books for freezing (see below):

Books with leather bindings and/or covers must be removed **immediately**, and either air dried, or freeze dried.

**Pack and remove books to take to the DRYING AREA.** Prepare the drying area as stated above. Wet books should be kept open. Wrap absorbent paper around the outside of the book, and lay it flat (text side up) in a plastic milk crate or clean, dry records box. Do not stack anything too heavy on top of an open wet book, even if it is wrapped. Closed wet books should also be wrapped around the outside in absorbent paper and place spine side down in a clean, dry records box or plastic milk crate that has been lined with an inexpensive plastic garbage bag. DO NOT pack the box or milk crate tightly, or all the way to the top. The wet books can still swell.

**The procedures for freezing** are the same as the procedures just mentioned for packing the books to take to the drying area.

Once the books are at the drying area, determine if they need to be cleaned. If they do - follow procedures below. If not, move on to air-drying books.

**Cleaning:** Closed wet books can be rinsed in clean water. Hold the book firmly closed, which will keep any dirt from getting into the pages during this process. Dunk the book into multiple containers of clean water repeatedly; until the cover and spine have been rinsed clean of debris/mud. Or, firmly grasp the book (keeping it tightly & completely closed), and gently move it back and forth under gently running water.

To **air dry a wet or damp book:** Stand the book upright on its topside or bottom side, whichever is driest. Do not stand it on the spine side or the side opposite from the spine. Insert wax paper inside the front and back covers. Insert absorbent papers between the pages at different intervals. Change the absorbent papers every half hour or so as needed when they become saturated. This will help speed up the drying process. Occasionally, switch the sides that the book is standing on (only if the opposite side is dry enough to withhold the weight of the book). This helps prevent distortion. Once the book is no longer wet but cool to the touch close the book and place on a solid surface. Put a slight even weight on the entire surface of the book. This will help to minimize the distortion. Continue to change the absorbent paper. Do this until the book is totally dry. Keep in an area where the climate is stable and the air is circulating. Remember, you will still need to check periodically for one year to see if mold is growing.

## **RECOVERY OF OTHER MEDIA (COMPUTER, MICROFORM, VIDEO/AUDIO TAPES)**

### **A. COMPUTER MEDIA:**

#### **Wet or damp 3 1/2" or 5 1/4" diskettes:**

Most 3 1/2 " and 5 1/4 " disks can be recovered from water damage. However, if a back-up is available, it is best to discard the water damaged original.

**FREEZING:** If the recovery process is not going to start by the end of 72 hours the disks should be placed wet into clean plastic bags and frozen. The disks can stay frozen until you are ready to start the drying and data recovery process. Only do this if absolutely necessary.

**RECOVERY:** Remove disks to the recovery area. If data recovery/drying process is not going to start immediately, store disks vertically in distilled water (do not crowd them). They can be stored like this for up to 72 hours before the data recovery/drying process begins.

**CLEANING & DRYING:** Remove all visible dirt by rinsing in cool clean distilled water. Drain and blot dry with a soft lint-proof cloth. Allow the disks to dry on absorbent material for 24 hours. Drain and turn them periodically. Copy the data to new disks.

If all debris cannot be washed from the disks: pry the disk open and remove the disk with gloved hands. Then, rinse the disk in clean, distilled, room temperature water, and dry the disk with a lint free towel/cloth. Insert the disk into a new plastic jacket taken from another undamaged and unused disk. After recovery it is advisable to copy the data to a new disk.

**DATA RECOVERY SPECIALISTS:** If the data recovery/drying process is not going to be done on site - store them vertically in distilled water, and ship immediately to professionals. See the index for experts in this field.

#### **Wet or damp CD ROM or Optical disks:**

CD's or optical disks can be recovered from water damage. However, if a back-up is available, it is best to discard the water damaged original.

**FREEZING:** This is not recommended for cd's and optical disks



**RECOVERY, CLEANING & DRYING:** Remove from water or dampness immediately. Remove the cd's or optical disk from their containers or carriers. Be careful not to bend or scratch them. Rinse off any dirt or mud under clean, cool distilled water. Drip-dry the disks vertically in some type of rack (dish rack, cd holder etc.). **DO NOT** dry them flat. Clean the disks with a soft, dry lint-free cloth. Move the cloth along the groove in a clockwise direction (left to right). Use a soft continuous wiping motion. **DO NOT** wipe up and down. Place the cleaned disks into new cases/holders. After recovery it is also advisable to copy data to a new cd or optical disk.

#### **Tapes:**

Remove to recovery area and air dry immediately. Rinse tapes in cold distilled water, and vertically store the tapes for drying. Tapes must be hand dried and stored in a stable environment for 48 hours before running or winding them on a tape drive. Clean the tapes by running them against a felt pad without the tape touching the heads. Copy the data to a new tape as soon as possible.

#### **B. MICROFORM**

##### **Microfiche, roll film, microfilm strips in jackets:**

Microforms (all types listed above) can be recovered. **SILVER HALIDE MICROFILM SHOULD ALWAYS BE PROFESSIONALLY RECOVERED.**

*Microfilm (rolls)* must be rewashed and dried within 72 hours. We recommend recovery by a professional.

Do not remove the roll film from the boxes. Fill the boxes with water. It's a good idea to make a block out of a few of the films by binding them together with rubberbands. This makes them easier to handle. Hold the boxes together with rubberbands, and pack into a container and ship it to a microforms processor. If your container is not water tight, line it with several garbage bags.

*Jacketed microfilm and microfiche* must be recovered within 72 hours. If this is not possible pack in clean water and freeze in a container lined with a garbage bag. Professional recovery is available (see index for experts in this field).

For cleaning and drying jacketed microfilm or microfiche begin by rinsing in cool distilled water. The best drying method is air-drying while clipped to a clothes line with rust free paper clips. Retain any pertinent information from the wet paper jackets, and transfer the information onto new jackets.

#### **C. VIDEO TAPES AND AUDIO TAPES (CASSETTES)**

Video and audio tapes can be recovered. Recovery must start within 60 hours.

Dismantle the tapes from their casings and rinse the tapes in cool distilled water. If dismantling the casings is not possible, go through the rest of the procedures as listed. **DO NOT UNWIND** the tapes. Stand the tapes vertically in some type of rack or use some type of support. Tapes must be dried and stored in a stable environment for **AT LEAST 48** hours before running or winding them on a machine. Put the tapes back together into clean casings. Then clean the tapes by running them against a felt pad without the tape touching the heads. Copy the data to a new tape as soon as possible.

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