

**APPENDIX C
RECORDS DISASTER RESPONSE and RECOVERY PROCEDURES and
TREATMENTS**

Appendix C contains procedural templates for responding to minor emergencies and major disasters that affect records. It also provides detailed instructions for recovering paper and other media damaged by water fire and contamination.

C-1 Disaster response and recovery procedures are the steps taken from the time a disaster situation is detected to the time when records are packed out, dried or otherwise salvaged and then restored to use. This section provides fill-in templates and specific procedural instructions that comprise a plan for response and recovery of damaged records. The extent and order of the steps may alter depending on the nature of the emergency, extent and type of damage, and available resources.

The primary natural disaster occurrences in Washington State are earthquakes and flooding. Earthquakes can cause water and sewage pipes to break which can result in records damage. Earthquakes can also knock over wall shelves, storage units, and book shelves which will exacerbate the problem. Flooding occurs almost yearly in river basin and bottom land areas.

Regardless of the damage source, the records disaster coordinator should be among the first of agency staff notified of a disaster affecting agency facilities. Notification is a critical step to the successful recovery of damaged records.

C-1-1 Notify Records Disaster Coordinator

During working hours, contact the recovery coordinator,

_____ (Insert name, title, and office phone number of the person who will determine damage by phone or through an inspection of the site.)

After-hours, notify: _____ (It may be appropriate to list (a) the maintenance/facilities staff, (b) the recovery coordinator, and (c) the security office.)

Name/Title	Office Phone	Home Phone/Pager
_____	_____	_____
_____	_____	_____

C-1-2 Assemble the records disaster recovery team

The recovery coordinator mobilizes the records disaster recovery team using the telephone list in A-4-1.

C-1-3 Gain access to the damage site

After a fire or other major disaster, the records disaster coordinator must gain access to the damage site quickly. The Fire Marshal agency security or safety officer or other public officials will be in charge of the building and will declare when it is safe for re-entry. The coordinator will have to work within their decisions, which can jeopardize

successful recovery. It is best to have reached an understanding about the value of the records and the need for quick access with the responsible authority ahead of time.

C-1-4 Initial damage assessment

The disaster coordinator and/or team should determine what level of response is warranted and whether or not to declare a records 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 Appendix C-2-1 Minor Water Damage and C-2-2 Mold Outbreak.
- (2) A records disaster will be declared if the nature and extent of damage warrants resources beyond those available at the time.
See Appendix A-6 Forms for an example of an Initial Damage Report Form

C-2 Minor records emergency response

C-2-1 Minor water damage

The following procedures are for minor water damage from roof leaks, plumbing system malfunctions, plugged drains and similar emergencies. The disaster coordinator or team should determine what level of response is warranted.

- 1. If easily done, attempt to determine the cause or source of the water.
- 2. 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.

Name/Title	Office Phone	Home Phone/Pager

- 3. If records and/or record systems are threatened by water, immediately notify the recovery coordinator.
Insert name, office phone, and home phone or his or her designated back-up

- 4. Insert name, office phone, and home phone. If neither is available, call in the following order:

Name/Title	Office Phone	Home Phone/Pager

- 5. Attempt to cut off water if feasible. See building and floor plans for the location of water shut-off valves.

6. **Turn off all electrical circuits** in the affected area. No one should walk through water until the appropriate safety officer has declared the area safe.
7. Pull the in-house disaster supply kit, located _____ (specify its location).
8. Protect the records while awaiting assistance (Choose a. or b.):
 - a. If water is coming from above, get plastic sheeting located in _____ (specify location) and use it to cover affected areas, cabinets, shelves, etc.
 - b. If water is coming in on the floor, get hand trucks, carts, or dollies located in _____ (specify location) and remove materials from affected area beginning with those in lower drawers and shelves, and move them to a safe location.
9. Remove any standing water with a wet-vac, located _____ (specify its location).
10. Take steps to **reduce the temperature and humidity and to increase air circulation:**
 - 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.
11. Initiate response procedures and instructions detailed in the Appendix C-3 scaled to the need. If the quantity of damaged materials is less than 50 volumes or three file drawers, they can be recovered in-house using air-drying techniques. (If the quantity of damaged materials exceeds that amount, you must decide between (a) freezing them and then air-drying in small batches or (b) calling in a company that provides drying services. Indicate that decision here.)

C-2-2 Minor Emergency Response: Mold and Mildew

Spores of fungi (mold and mildew) are found almost everywhere. They only require the proper conditions of moisture, temperature, nutrients, and sometimes light to proliferate. Media such as paper, cloth, leather, and adhesives may be consumed or stained by many types of mold. The combination of temperature and humidity remains the most critical factor influencing their growth. General cleanliness and the removal of dust and dirt reduce the risk of infestation.

When the temperature reaches 70 degrees Fahrenheit and relative humidity is near 70 percent, conditions are ideal for growth and reproduction of most types of mold. Any rise in these levels creates an environment conducive to increased mold and mildew growth. They will generally grow within 48 to 72 hours after the onset of these environmental conditions. It is important to note that the absence of visible growth at low temperatures does not indicate the death of spores.

What is mold?

- o Mold is one of a family of environmental microbes that includes yeasts, mildew and mushrooms. Mold is the most prevalent form of contamination.

Requirements for growth:

- o Spores - are everywhere
- o Moisture - +70 percent relative humidity
- o Temperature - if it's comfortable for humans, it's great for mold
- o Food source - eats anything organic (paper is a delicacy)
- o Time – growth can begin in 48 hours if conditions are right

How to recognize mold:

- o Musty smell resulting from digestive process
- o Colored spots on paper (early stage)
- o Holes eaten in paper (advanced stage)
- o White, beige powder forms (usually a sign of dead mold, but does not mean material is free of live mold or dormant mold spores)

How to destroy mold:

- o Dehumidification
- o Fumigation
- o Freeze drying
- o Vacuum fumigation or vacuum drying

The onset of mold is of major concern in recovery. It consumes and destroys paper and book bindings.

Some people will have an allergic reaction. Some molds can be toxic.

Workers should wear masks or respirators and disposable gloves when working with records containing mold.

A mold outbreak can occur if temperature and humidity controls are not adequate, but also may be the result of a flood or other water damage. In the event of an infestation, take the following actions:

1. If mold is on a few isolated items:
 - a. Place items in freezer bag located in _____ *[give location]*.
Call the Recovery Coordinator, _____
(Insert name, office phone, and home phone). If he or she is not in the office, leave a message.
2. If mold is discovered in whole drawers, stack ranges, or storage areas, call: *list here:* (a) a representative of the maintenance/facilities department who can adjust the temperature and humidity, (b) the recovery coordinator, and (c) the records coordinator or records officer.

Name/Title	Office Phone	Home Phone/Pager
_____	_____	_____
_____	_____	_____
_____	_____	_____

- a. Transfer all infected materials to an isolation room (insure that other areas will not be affected as the materials are being transferred). Seal materials in multiple garbage bags.
- b. Immediately and thoroughly clean and sterilize the affected storage area(s) (see item six below), including the climate control system if possible.
3. Determine whether the affected records must be retained. Consult the records coordinator/officer to verify retention requirements. Consider reformatting (photocopying, microfilming, etc.) badly damaged/affected items.
4. If the records must be salvaged, consult a conservator or preservation specialist (see Appendix D -5 Supplies_and Services) when dealing with severely affected materials. Small scale mold attacks can be destroyed by applying Lysol as safe fungicide. Sunlight or ultraviolet light also kills mold. Expose individual documents directly for 10 to 20 minutes. Thymal or alcohol may be used also, preferably under a paper conservator's direction. See Lois Price's *Mold: Managing a Mold Invasion* for detailed instructions at www.ccaha.org/mold
5. Dead mold residue can be removed from documents using a vacuum with a soft brush attachment. The vacuum should be fitted with a HEPA filter to stop the spread of mold spores. An alternative is to use a wet-dry vacuum with several gallons of water mixed with a fungicide like Lysol in the tank. Always work from the center of the document to the edges.
6. Large scale mold invasions can be destroyed using desiccant air drying, vacuum drying, and freeze drying; however freeze drying will not kill mold spores.
7. Check treated materials periodically (at least monthly) for evidence of new or recurrent mold or mildew growth.

C-3 Major record disaster response procedures

C-3-1 Establish Security Measures

- a. The _____ (Indicate facilities manager or other personnel) will secure the site as far as possible by replacing doors and windows or by other means.
- b. Only authorized persons will be allowed to enter the site. They will be designated by the use of _____. (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 pre-printed and maintain them in the in-house disaster supply stockpile so they will be available immediately.) The personnel officer will be responsible for distributing these and will maintain a sign-in and 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 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.

_____ (disaster recovery coordinator or agency head, etc.)

C-3-2 Establish an operations center See Appendix A-7

In a routine emergency where the building is intact, operations will be controlled and coordinated through the recovery coordinator's office, located at (Indicate address, room number and phone number).

If off-site space is required for operations control or for recovery activities (sorting, packing, drying, etc.), consult the Supply and Service Providers List in Appendix D-4.

C-3-3 Stabilize the damage site

The _____ (name a position) 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 through proper authorities such as the Department of Ecology and local health departments and HASMAT units 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.

C-3-4 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.

- 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 degrees and the relative humidity below 50 percent, and the system will run 24 hours per day.

- b. If the heating/air-conditioning system is not working due to damage or power outage, use oscillating fans to circulate air. Stagnate humid air will exacerbate mold growth.

- c. The _____ (name a position) will ensure that staff monitors the temperature and humidity at least every four hours to measure progress. The following monitoring devices _____

(specify which ones you have available) are located in _____ (specify location)

C-3-5 Stabilize the records

If site stabilization is not possible, most records will have to be moved off site.

Undamaged records should be moved to a warehouse, agency or commercial records center or rented space that has a suitable environment.

Records damaged by water can be stabilized by freezing.

The disaster recovery coordinator _____ (or name a position) activates agreements for the use of cold storage and warehouse space made as part of the Disaster Recovery Plan or requests the agency purchasing officer to secure space for both damaged and undamaged records. (See C-5-2 Freezing.)

C-3-6 Make a detailed damage assessment

The recovery coordinator, photographer and other team members as assigned, will make a detailed assessment of damage. The photographer will use the camera and film stored in the disaster stockpile in _____ (give room number or other location) or use available equipment.

The assessment can be made using a report form such as the example Appendix A-6. It should be far more detailed than the "Initial Damage Report," but should not be made at the drawer or box level. Doing so would simply cost too much time. At a minimum it should be made at a room or area level, and at a maximum at the cabinet level.

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

C-3-7 Develop a detailed plan of action

The _____ (specify key personnel who will be involved, generally including the 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 records recovery plan.

If damage is extensive, the plan may require decisions on what records to salvage based on value, extent of damage, and whether or not they are duplicated elsewhere.

Utilize the functional risk probability analysis, the records recovery priority list, and the essential records schedule (see Part 1, Chapters 1 and 4) to aid in decision making. Document each decision for insurance and public disclosure purposes.

Determine the kind and degree of damage that records in each location have sustained. These will be "gross" designations, not on an item-by-item nor perhaps even a box-by-box or drawer by drawer basis, but (depending on the extent of the disaster) on a range-by-range, cabinet-by-cabinet, or room-by-room basis. Use a scale for rating degree of damage, i.e., Level 1 to 5, with Level 1 indicating minor or no damage and Level 5 indicating extreme damage.

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 disaster recovery companies. This decision will influence all facets of the recovery plan.

1. Which materials will be salvaged and which discarded?
2. Will the disaster recovery team or staff handle the salvage operation, or will some or all of it be contracted to disaster recovery specialists?
3. How will the materials be salvaged? Recovery operations for records to be air-dried locally differ from those that are appropriate for records to be sent to a drying facility.

Appendix E contains information about various drying methods, their advantages and disadvantages.

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

Before salvage begins, the _____ (disaster recovery coordinator) will:

Determine the salvage priorities for various agency records, based upon those given in the "Recovery Priorities" list in the Plan but modified based on the type and extent of damage and the services and funds available.

Decide what drying and other recovery methods to employ, and what resources must be mobilized.

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).

C-3-8 Procure and assemble the necessary supplies and services

The agency procurement officer 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 and equipment stockpile inventory is in Appendix D-3.

External suppliers and service providers already identified are listed in Appendix D-4.

C-3-9 Determine and assemble additional personnel needed

The following also may be called to help:

- Supplementary agency personnel as needed
- Volunteers
- Temporary Help
- Others as determined by the recovery coordinator

Agency personnel shall be informed exactly when and where to report. Additional details are provided in Appendix A- 4-3- c and A-8 - Communications Plan.

C-4 Pack out

This section assumes that all the items covered in the “Response Procedures” have been addressed including triage decisions about which records to salvage and in what order, and by what method.

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 example, for 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].

C-4 Pack-Out

Records usually have to be removed from affected areas for immediate drying in a stable location within the organization, to a cleaning or recovery area within the organization, or transported to a freezer facility or a commercial drying facility.

Execute the pack-out operation in the order determined by the recovery coordinator, based on the “Recovery Priorities” list and the degree of damage. If a full range of recovery services is available, it is generally appropriate to begin with the wettest materials and move to 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 quickly recovered.

C-4-1 Organizing Pack-out

Depending on the nature and extent of damage, available help and possible logistical constraints, work crews in the pack-out operation will consist of people assigned to the following tasks:

Pack-out leader: ensures smooth workflow, alleviates bottlenecks, and troubleshoots

Box assembly: sets up boxes, etc.

Retrieval: removes materials from shelves, cabinets, floor, etc., attempting to pull materials of similar size for each container

Wrapping: cuts freezer/waxed paper (necessary for bound materials only).

Packing: takes items from retriever and wrapper, and boxes items

Sealing: seals and (working in concert with recorder) labels containers

Record keeping: keeps a written packing list

Transporting(s): moves containers from packing area to pallet, elevator, stairs, etc.

C-4-2 Packing for pack out: Pack-out procedures for wet records depend on whether materials are being transported to a nearby area for immediate drying or to an off-site cold storage or freeze-drying facility. The latter requires more careful packing and more thorough documentation. Different recovery methods may mean different packing out practices and supplies. Commercial records recovery services will probably recommend and sell appropriate containers. Use the following if you are “on your own” or using a public or private service that does not have specific container requirements:

Freezing: If the goal for some or all records is stabilization and/or recovery by freezing, it is preferable to pack records in plastic crates (milk crates) that have ample holes for air circulation which hastens freezing and drying. Cardboard boxes are satisfactory for minor water (edge) damage.

Cleaning mud and debris: Plastic crates always.

Storage: Undamaged records destined for temporary storage should be boxed in standard 1 cubic foot records storage boxes. Avoid use of odd size boxes not designed for record shelving or not stackable on moving pallets.

Thermo-vacuum deodorizing and fumigation: Either plastic crates or boxes will do.

In-house air or interleaf drying: The container depends on the degree of water saturation. Cardboard boxes are satisfactory for minor water damage. Plastic crates are preferable for saturated records, as seepage from the files to cardboard container may create sufficient weakness to cause the bottom of the container to collapse.

Microfilm and other photographic negatives should be put into five-gallon barrels filled with clean cold water and transported that way to a re-processing facility. Once wet, film should never be allowed to dry out. If it does, emulsions separate and adhere to an adjacent film base.

Note: As a rule of thumb, unless otherwise stated, cardboard boxes are preferable from a packing, labeling, cost, and storage viewpoint.

To move materials within the building during pack-out, use hand trucks, utility carts, or dollies located _____ (give locations). Metal hand trucks and utility carts are preferable. If only wooden ones are available, they should be well covered with heavy plastic sheeting to prevent damage to their finish.

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.

Files: Place folders in boxes located _____ (give locations). Place the folders vertically in boxes (standing as they would in a file drawer). Do not fill boxes completely in order to allow for swelling. However, don't allow the folders to slump or slide down within the box.

Bound volumes: Load into boxes for transport. Place normal-size volumes in a "spine-down" position. Pack large volumes flat in the boxes. If time allows, loosely place sheets of freezer paper or waxed paper around every volume (or every other volume). Enough space should remain in the packed boxes to allow for swelling. Don't permit volumes to become bent or distorted in packing or transport.

Microforms: Place in cool, clean water until ready to transport for reprocessing. See further details in the "Recovery Priorities" section that follows.

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 the "Recovery Priorities" section.

If using cardboard boxes, do not stack more than four boxes high. The boxes can be stacked on pallets and the pallets can be shrink-wrapped to prevent slippage during transportation. Pallet jacks or a fork lift can then be used to move the pallets onto trucks or to the drying area.

C-4-3 Labeling:

Each box or crate should be labeled. Labeling may be comprehensive and include all of the inventory information such as records series title, dates, office location, etc. It can also be a simple control number assigned to the box in a database or box listing sheet. Use water proof markers to label boxes and plastic tags for plastic crates which have limited space for writing. (See Appendix C for additional instructions for "Packing Out.")

C-4-4 Know what you have - Recovery Tracking System

For inventory control as well as insurance purposes, it is necessary to know the condition and disposition of records, especially if they are being transferred to a contracted restoration service provider.

- What records were destroyed in the disaster?
- Which records need to be removed or replaced?
- Which records were unharmed or sustained only minor damage?
- Which records were damaged but are salvageable?

As materials are removed, one team member will label each container with a brief notation of its contents and original location (by shelf or file name/number range; by cabinet/drawer; by record series; etc.). Indicate the damage (e.g., "wet," "dry," "smoke," "mud," etc.), salvage priority, and, if time allows, the volume (number of volumes or archives boxes) inside. If materials are going to different areas (e.g., some to the rinsing stations, others to an air-drying area, and some to a freezer), also note the destination of each container.

If there is a large number of boxes, give each a brief unique designator code (e.g., floor/section designation and box number), then provide the detailed information regarding contents, damage, and priority on an inventory/packing list and or in a tracking system spreadsheet.

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

The photographer should take photographs or videotape the salvage operations to document the recovery effort.

C-4-5 Removal

If elevators are working and conditions permit their safe use, they will be used. If not, the following strategies may be used: use of "human chain," laying plywood on stairs to create ramps for sliding boxes down, sliding boxes out windows onto ramps, and removing boxes out windows into dumpsters suspended by cranes.

C-5 Records Recovery Treatment Procedures

C-5-1 Rinsing and cleaning:

Some records may need cleaning after a disaster.

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 for the rinsing work. The objective of the cleaning is not to make the materials pristine, but to remove gross deposits.

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. Specify here the areas that seem most likely to be suitable:

Personnel working in the rinsing area should be provided with rubber boots and gloves and waterproof clothing. If the water has been contaminated by sewage, 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:

Wet records covered with mud or debris can be washed before being sent for drying. If there is edge mud or debris they can be lightly sprayed while in plastic crates. The spray will remove most of the debris which will drain out of the crate. If entire documents are covered they can be bathed in a shallow pan and literally hung out to dry. (See Appendix C-3-4.)

If mud 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 mud deposits are heavy:

- Set up a series of 3-8 large 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 the workers may 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. This would significantly slow down the operation.

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

Never use these rinsing techniques on records with soluble inks (watercolors and many manuscripts), animal skins (leather, vellum, or parchment), or works of art on paper. Always “test” the ink first by wetting one character or word to see if it “feathers.”

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 in the packing instructions above.

C-5-2 Freezing

Freezing may be used as a stabilization technique for wet records. It should be used whenever records cannot be dried within 48-72 hours, because records left wet and at normal temperature beyond that time are at great risk for developing mold. In addition, bound volumes do not continue to swell and inks do not continue to “feather” or diffuse 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 difficult work of response and pack-out. There is no limit on the amount of time that materials may be left frozen. In fact, paper will dry over time in a freezer.

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

Cold storage companies are located in most cities and public port facilities often have cold storage facilities. If your organization has a cafeteria or restaurant, it may have a walk-in freezer you could use for small to medium quantities. As you contact services, be aware that state and other health regulations may restrict the storage of records and books with certain foodstuffs. In a pinch, you can use a home freezer; those that are self-defrosting work best.

In an area-wide disaster such as floods or severe weather, you may not be able to find a local freezer facility. In that case, you may use a refrigerated truck for transporting materials to a remote facility or for temporary cool storage on-site; while it will not freeze the materials, it may keep them cool enough to slow mold growth.

Your plan should describe:

- What freezer facilities you have identified, with the name of a contact there and phone number for after-hours emergencies
- Arrangements for transporting materials to the freezer facility, whether using your own vehicles or a trucking service

C-5-3 Drying

Most damage to records is due to water. There are six or more common methods of drying water soaked records ranging from interleaf drying to vacuum freeze and desiccant air drying. See Appendix E for descriptions of each and their advantages and disadvantages. Detailed procedures for two methods, Interleaf and air drying, are detailed here because they are the two that require hands on action by the Disaster Recovery team and other agency staff, and thus require the greatest knowledge and training. The other methods are most often done by contracted services, with less participation by the team or agency staff.

C-5-3-1 Paper: Water Damage

The greatest damage to paper from water is done during the first 8 hours after a disaster. It is essential to begin restoration immediately after assessing the damage and stabilizing the area. Only small collections that can be dried within 72 hours should be restored without prior freezing. Collections larger than three file drawers or 30 to 50 books should be frozen as there will likely be neither staff nor space to process them.

C-5-3-1-a Interleaf Drying is ideally suited to emergencies involving small number of records in an environment where the temperature and relative humidity are low, so as not to create an environment which can harm the records.

Make sure the area for drying is large and clean, with adequate security, and that it has proper temperature and humidity controls.

Method:

- In a safe recovery station, set up tables and cover them with clean unused newsprint or other blotting materials (i.e., blotter paper, paper towels, cotton rags, florists non-colored waxed paper).
- Remove the records from the damaged area using milk crates.
- Remove the folders from the milk crates. Remove the records the folders, and discard fasteners and file folders. Folders do not dry well or will warp. It is best to create new folders. Be sure to write down information from the folder tab prior to discarding it. Keep the records in the order found in the folder.
- Place the individual records on the table. Use some sort of identifying mark in between file folder so that the records will be returned to the correct folder after being dried.
- Change the blotter paper regularly.
- Remove the records when they are totally dry, usually 30-48 hours. Return all the records to their proper files ensuring that reused file folders are not damaged.

TIP: If the wet sheets are difficult to separate, use a sheet of polyester (Mylar). Mylar is considered a polyester sheeting since it will create an electrostatic charge. An example of Mylar found in everyday use is overhead projector sheets. Mylar sheets can be purchased at any office supply store.

- Place a sheet of Mylar on the top of a stack of wet paper and gently lift.
- Place the document on the table, and when it has partially dried, remove the Mylar.
You will need several sheets of Mylar. Remove the Mylar as soon as possible to allow air to circulate over the paper to dry it more quickly.

C-5-3-1-b Air Drying

There are several methods of air drying.

- Use large flat surfaces such as folding lunch tables.
- Spread blotter paper on the tables and place wet documents on top.
This method is faster than interleaf paper but requires huge amounts of space.
- Loosely place documents in metal file sorters
This method takes less space than using tables but is slower.
- Clothesline or fishing line may be used to dry papers. Hang the line between two objects and clip the documents to it. Use plastic clothespins to hang records - wooden clothespins will retain water
This is a good way to dry brochures and pamphlets.
Only use this method on paper if a small section of the paper is damp.
Do not hang extremely wet records as they are fragile and may pull apart.
- Shallow baking trays or screens may also be used for drying. Cover the bottom of the tray/screen with blotter paper so the records will not stick to, nor take the shape of, the pan. Pans can be stacked to allow larger numbers of records to dry at the same time.

Wear disposable rubber gloves to prevent dirt and oil from skin from getting on the records.

Some items, such as blueprints, maps, etc., will need professional work due to the fragility of the paper used to print them and due to their size.

C-5-3-2 Books: Water Damage

Books can be treated the same way as loose paper, except for positioning.

- Set up tables in recovery area. Cover them with absorbent material.
- Remove books from damaged areas using milk crates or heavy cardboard boxes.
- Lay books flat on table and interleaf using newsprint, paper towels or other available absorbent material. Replace absorbent material frequently until book is dry. or,
- Stand books upright on absorbent material, open each book with boards at a 90 degree angle and “fan” pages, separating as many as possible. Repeat fanning process every half hour to hour until dry.
- After a few books are dry stack them and apply light pressure. This may help reduce wrinkled pages and warped covers.

C-5-3-3 Coated Stock: Water Damage

Coated stock, books and magazines, photography of value should be frozen right away. Do not try to air dry. Employ a professional conservator to treat these materials.

C-6 Recovery From Fire Damage

(Materials involved in a fire are likely also to suffer water damage.)

- Treatments for fire damage apply to both records and books.
- Records and books which have both fire and water damage should be dried first and then treated for fire damage.
- Records and books that are not wet and only charred around the edges or damaged by soot will not need immediate attention.

C-6-1 Treating Charred Records and Books

- Charred, sooty or mold covered wet records should not be cleaned until returned from drying. Attempts to do so will result in smearing, making the matter worse.
- Dry or dried, charred, sooty, dusty documents or documents covered with dead mold residue after drying can be cleaned. Use a "Hake brush, very soft dry cloth towels (like diaper cloth) and clean outwards from the center of the document. A low negative pressure vacuum cleaner with soft brush head or, for charred records, a brush head with a loosely woven cloth cover can also be used with caution.
 - Set up clean work tables and cover with disposable material such as news print.
 - Remove records very gently from damaged area using milk crates cardboard boxes.
 - Remove documents from file folders. Copy all information from folder tabs. Keep documents in the order that they were in the folder. Do not mix items from different folders.
 - Handle carefully as burnt or charred paper will be brittle and is easily torn or may crumble.
 - Gently clean records with a Hake brush or soft chamois cloth. Move the brush or cloth from the center of the page to the edges will help avoid tears and will allow dust and charring to fall away from the document.
 - If the records are badly damaged, copy using a flat bed copier or microfilm machine.
 - If records are only coated with soot, and not actually charred, they can be cleaned with a low suction vacuum cleaner.
 - Return records to new folders after treatment.

C-6-2 Burnt Material

Damage caused by extremely high temperatures is irreversible; however, the information from severely burnt records can often be read by photography using an ultraviolet light. This procedure is expensive and should be reserved for only the most valuable information. These methods usually are carried out only in forensic science laboratories and are available only in exceptional circumstances. In the absence of professional help, no attempt should be made 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 remaining 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 D -- Supplies and Services). Others may be found in the Yellow Pages.

C-6-3 Smoke and Soot Deposits

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

Treat the materials in-house, using "chemical sponges" (pure latex rubber sponges) to remove the soot particles from the edges of volumes and documents. Use gentle sweeping motions, moving from the center out to the edges of the document.

A professional document conservator should evaluate archival, fragile, or specialized records before employing any general-purpose soot and particulate removal techniques.

C-6-4 Smoke Odor Removal

Professional companies can deodorize fire-damaged paper records. There are two 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 a thermo-vacuum or an ozone chamber. Ozone more effectively neutralizes the odor. However, ozone is a powerful oxidizing agent that irreversibly accelerates the aging of paper, so it generally should not be used on archival or intrinsically valuable records. Thermo-vacuum systems will also eliminate smoke odor. Companies listed in Appendix D -- Supplies and Services, provide this service.

When dealing with fire damage to special materials (art works, photographs, magnetic media, etc.), it is best to consult one of the conservators or other specialists listed in *Appendix D -- Supplies and Services*.

C-7 Recovery from Contamination

- Do not attempt recovery of any contaminated records until it is positively identified.
- Contact the local health department, State EMD (see Emergency Contact Numbers, Appendix B-10) EMD will contact the appropriate state departments such as Health, Ecology or Labor and Industries.
- Contaminated records can be recovered without outside intervention provided it is deemed non-injurious. Recovery crews should wear disposable rubber gloves. Face masks are necessary if fumes are present.
- Recovery of contaminated records most often means electrostatic copying or microfilming as contaminants are difficult to entirely remove, leave stains and residues which will accelerate disintegration of papers and films, and may transfer to adjacent documents when refilled.
- If contaminants leave residues, follow the procedures for cleaning and rinsing.
- If the contaminate is deemed injurious, a decision must be made to either destroy the records or call in a professional recovery company experienced contamination problems.

C-8- -Recovery Procedure for Microfilm, Photographic Film

C-8-1 Microforms Recovery

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, but a duplicate copy should be made and the damaged one discarded. Coordinate microfilm salvage with service bureaus and processing laboratories

C-8-1-a Microforms Recovery Priority

1. Color microfilm is 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 duplicates and should be replaceable, moreover they are most stable and should generally be salvaged last, if at all.

C-8-1-b Microforms Recovery Procedures

- Fasten a rubber band around the box so the box, label, and roll will remain together.
- If the film is dirty or muddy, put in a 5-gallon bucket filled with clean, cold water, and agitate lightly to remove major dirt deposits.
- Drain off water. Replace with fresh water that is clean (preferably distilled) and cool until ready for packing.
- 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, Appendix D -- Supplies and Services. The State Archives Imaging Services Section will also clean and dry film. Commercial microfilm labs will clean and dry film for a fee.
- 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 35 mm film (about 80-100 reels of 16 mm film) with a maximum weight of 35 pounds.
- Prepare and enclose a packing list in the container, and retain a copy of it.
- Arrange for shipping via UPS, Federal Express, or other carrier, and be sure the service bureaus know to expect receipt.

C-8-2 Microfiche

If the fiche is a duplicate and replacements are readily available, do not attempt salvage. If salvage is required, follow these steps:

- Keep the fiche in clean, cool water until ready to salvage.
- Set up small buckets, shallow dish pans, or photo trays with clean, cool water.
- Dip the fiche in the series of water baths to rinse off dirt, mud, or other debris.
- 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.

C-9 Computer Media

Special procedures for protecting computer media are outlined in Appendix B-4 – Backing up PC's.

The best procedure for recovering information recorded on computer media is to use your backups to recreate whatever data and files were on the affected media. If you attempt recovery techniques described here, never put the affected or damaged media in one of your newer or better machines, as the equipment could be damaged. If in doubt, always consult a data recovery specialist. *Appendix D -- Supplies and Services*, lists some of those companies.

C-9-1 CD-ROM and optical disk

- Rinse in cool, clean water.
- Dry with a very soft, non-abrasive sponge. To accelerate drying, use a blow dryer turned to the "cool" setting.

C-9-2 Hard drives and magnetic tapes

To the extent possible, use backups stored off-site. If salvage is required, contact specialized companies listed in *Appendix D-- Supplies and Services*.

C-9-3 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.

- Remove the disk from its plastic casing.
 - ·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 micro-spatula 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.
 - ·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.
- Reach in (using clean hands or lint-free gloves) and gently remove the magnetic medium.
- 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.
- Open a new diskette, using the procedures outlined in step 1. Remove the magnetic disk from within the casing. Place it into the new case. When recovering 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.
- 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.
- Copy the damaged disk onto a new diskette.
- Remove the recovered magnetic medium and discard it. You can then continue using the diskette housing for recovering information from additional damaged diskettes.

C-10 Post-disaster restoration

After records have been recovered, some further restoration work may be required before they can be re-filed, re-shelved or returned to other storage locations.

C-10 1 Repair

Some records may need and deserve repair. Papers can be torn or have jagged edges resulting from charring. The first rule of repair is: Do not use adhesive tape to repair valuable records. Many tapes contain chemicals harmful paper. They are also difficult and expensive to remove. All repairs of permanent, historical and intrinsically valuable records should be repaired using only reversible and non-damaging treatments archival treatments. Professional paper conservators should be employed for this purpose, or at least consulted, unless a member of the staff or volunteer is technically trained for this work.

C-10-2 Storage:

Records that have been water-damaged or mold-infested should be kept apart from other records for at least six months in a well-ventilated area having good climate control (65 degrees Fahrenheit and 35-45 percent relative humidity). The following locations may be used for this purpose:

C-10-3 Assessment: _____ (specify the responsible position/person) will evaluate the records and decide on the next steps:

Outline procedures for each below.

Note: These are primarily records management decisions and actions and therefore not delineated in this manual.

- **Disposal:** (Specify who has legal authority to order the destruction of records, what record-keeping must be done, and where or how records will be discarded. Agency records coordinators should be contacted. The Archives and Records Management Division may also be contacted for guidance. Remember that there are Washington state statutes and codes that establish requirements for retention, maintenance, and security of government records.)
- **Reprocessing and Duplication:** (Specify procedures and responsible staff.)
- **Replacement:** (Specify procedures and responsible staff.)
- **Repair:** (Specify procedures and responsible staff.)
- **Re-housing:** ([Specify procedures and responsible staff.)
- **Re-labeling and Shelf Preparation:** (Specify procedures and responsible staff.)
- **Re-filing and/or Re-shelving:** (Specify procedures and responsible staff.)

C-11 Post Disaster Briefing and Evaluation

After the records recovery operations are complete, evaluate the operation of the Records Disaster Plan. Talk with those involved.

- Were they sufficiently prepared?
- Did the Plan work?

- How could it be strengthened?

Revise the plan accordingly.

Remember to thank those within and outside the organization who assisted in the recovery operation.