

Managing the commonplace: Small water emergencies in libraries

Gerald Chaudron
University of Memphis

ABSTRACT

When libraries undertake emergency planning, it is likely that the risks such planning attempts to address are at the catastrophic level. In the case of water-related emergencies, the literature about disaster planning focuses on 100-year floods or hurricanes rather than the more common events of burst pipes or leaky roofs. This article uses two case studies to examine the impact of small water incursions on the libraries concerned, how those libraries managed the emergencies, and what lessons were learned which will inform their planning for future incidents. The case studies show that while both incidents were water-related, they are quite different in terms of source, size, impact, recovery time, and frequency. Libraries should be planning for the small emergencies first, and then scaling up their preparation to account for the larger, less frequent events, rather than the reverse. More libraries may be persuaded to do such planning if they are preparing for a probable scenario rather than one which may only be a possibility.

Key words: Disaster planning, Emergency response, Emergency recovery, Flooding, Libraries

INTRODUCTION

Libraries, by their very nature, are exposed to a number of risks. The materials housed therein are made of paper and other natural products which are vulnerable to damage from environmental factors such as humidity, heat, light, mold and pests, which can be exacerbated by manmade hazards including pollution and deliberate acts of destruction. While libraries continue to hold analog formats, they are moving more and more to digital formats which have their own vulnerabilities. Every library should have a plan to cope with the inherent risks and many rely on literature produced in the last thirty or more years to create emergency or disaster plans. The handbooks and guides cover the full gamut of possible emergencies and tend to use the more catastrophic events as the basis of their planning. This leads to the creation of plans which are designed to respond to the destruction wrought by a hurricane or a 100-year flood but give little assistance to coping with a burst pipe or leaking roof.

Water is the most significant threat to libraries (International Records Management Trust, 1999, p. 8), whether it is in the form of a breached levee or a leaky roof, torrential rain from a hurricane or an overflowing bathroom sink. Libraries must be prepared for all types of water emergencies but few librarians, fortunately, have to deal with catastrophic events during their careers. It is the small-scale water emergencies, the “routine” kind such as roof leaks and malfunctioning plumbing, which are a constant threat and most libraries will sustain damage from them (Dawson, 2009, p. 4, 10). Because such damage can be quite extensive, these events are still disastrous in their effects on the collections,

infrastructure, staff and finances of the institution involved. While the number of books, manuscripts or other materials affected during a small water disaster may not be great, it is just as likely the most valuable items will be impacted as those on the discard list. Buildings old and new require running water, fire prevention systems and waste water disposal and all this water makes our buildings vulnerable to incursions, and the larger the building, the greater the vulnerability. Compounding the problem is human fallibility which leads to design faults, delayed or incomplete repairs, and accidental or deliberate damage which creates flaws in the tightness of the building envelope. Once released into a space, water will run wherever it can to find its lowest level, and that could be under floors, through ceilings and down walls, and into any cavity. Assuming the source of the water can be found, discovering where it went and then drying the space out can be a lengthy and possibly expensive exercise even if the incursion seems minor. The demands on staff during the actual disaster can be great, causing stress and throwing everyone off-balance but the recovery can be worse as the adrenalin subsides and the reality of cleaning up and assessing and repairing the damage is faced. Finally, there is the financial impact of the disaster. Funds designated for other purposes are redirected and budgets are strained, which is especially difficult for many institutions living with tight or diminishing incomes and rising expenditure.

This article will examine small-scale water disasters and, using case studies, show how easily such emergencies occur, what might have been done to mitigate or even prevent them, and how the disaster was handled when the water started to flow. But the disaster is not over when the water stops, for it is then that the real work of recovery begins and, in the days and weeks that follow, the affected institution must have a plan in place to make that recovery efficient, fast, and as complete as possible, so that the needs of all the stakeholders are addressed.

LITERATURE REVIEW

Libraries, along with archives and museums, consider themselves as safe repositories for our cultural heritage, with the larger institutions proudly touting their security systems and climate –controlled spaces. The reality is, however, that most American collecting institutions have struggled to provide even the basic care their collections require according to the Heritage Health Index survey taken in 2005. This survey (a follow-up of which is expected by the end of 2015) revealed that around 50 percent of responding institutions had damage to their collections from sources such as light, airborne pollutants, and improper storage, 40 percent had no funds for preservation, and 80 percent had no capability to implement an emergency plan should a disaster strike (Heritage Health Index, 2005, p. 2). Unfortunately, disasters occur more frequently than we would like to think. Another survey taken in 2005 in the United Kingdom found that 30 percent of respondents had suffered a disaster of some type in the previous five years, and 21 percent had seen more than one (Dadson, 2012, p. 3). There is no reason to think that the numbers are much different in the United States. The Association of College and Research Libraries reports that 75 percent of small to mid-sized college libraries had experienced an emergency, some multiple times (Wilkinson, Lewis, & Dennis, 2010, p.7).

While light, temperature and pollution take their inexorable toll on our collections, water poses the most immediate threat because of its unpredictability and potential to inflict significant damage. The Heritage Health Index survey noted that 53 percent of institutions had materials harmed by water in one form or another (Heritage Health Index, 2005, p.2). In the British survey, 68 percent had experienced a water-related incident. Compare that figure with the one for fire, which is often feared more because of its

seemingly catastrophic potential; only 11 percent had faced a fire emergency (Dadson, 2012, p. 3). It is clear libraries must try to do more to prevent incursions of water and recognize that it will most likely be an “inside job.” Broken pipes, backed-up toilets and leaking roofs are the culprits much more often than flooding rivers. Libraries are vulnerable to water because they are often housed in older buildings which have been repurposed and modernized, or newer ones where possibly function and the tightness of the building envelope have been subordinated to architectural considerations. There may be nothing we can do about the design of the building but we must become more proactive in recognizing the dangers built into the structures we are given to house the collections we manage. But few of us seem to be doing much to plan for the next emergency. Surveys in the early 1990s found that only about 25 percent of libraries had made any effort at disaster planning, (Kahn, 1993, pp. 73-74) and that number appears to have changed little since then (Heritage Health Index, 2005, p. 62). Yet, if the literature is to be believed, planning is essential to minimize the effect of, and even prevent, disasters (Kahn, 2003, p. ix; Wilkinson, 2010, p. 3; Dadson, 2012, p. ix; Fortson, 1992, pp. 3-4).

Disaster Planning

The librarian searching for information on disaster planning, prevention and recovery is well-served by resources both hard-copy and electronic. Since the late 1980s, a steady stream of books have been published attempting to provide the information needed to help librarians create disaster plans and preserve materials damaged during an emergency situation, perhaps to the point of belaboring the subject and overwhelming their audience with information (Fleischer & Heppner, 2009, p. 125). As Johanna Wellheiser and Jude Scott note, there has been a shift in emphasis from single item conservation and the causes of disasters to broader preservation management strategies which are integral to the mission of the institution and the community (Wellheiser & Scott, 2002, p. xv). This change can be seen in the two editions of Wellheiser’s own book. The first edition of *An Ounce of Prevention*, written with John Barton and published in 1985, has sections on surveys, disaster protection, types of disasters and the recovery of different formats of materials. Nearly twenty years later, there is still information on specific types of disaster but the emphasis has changed to “integrated disaster planning” (Wellheiser & Scott, 2002, p. xv) where the process of putting together a disaster plan is detailed. Emma Dadson’s *Emergency Planning and Response for Libraries, Archives and Museums* (2012) is structured along similar lines. These are not how-to manuals to be consulted while wading through water flooding the reference section. Indeed, the message of many books on disasters is, if you are looking for information to cope with an unfolding emergency, this is not the resource you need and it is probably too late anyway. The Boy Scout motto of “be prepared” has become a mantra in the field of disaster planning but that preparation has become generalized to cover the gamut of emergencies.

In part this may be because of the mega-disasters which parts of the United States have suffered during the early twenty-first century. If the flooding of the Italian city of Florence by the Arno River in 1966—which damaged or destroyed thousands of books, manuscripts and works of art—was a wake-up call to many custodians of heritage materials toward the end of the last century (Fortson, 1992, p. vii), the attack on New York’s World Trade Center in 2001 and the devastation wreaked by hurricanes such as Katrina in 2005 and Sandy in 2012 have heightened awareness of the potential for large disasters which go beyond the confines of one institution. Wilkinson, Lewis and Dennis’ *Comprehensive Guide to Emergency Preparedness and Disaster Recovery* (2010) uses case studies of large disasters like the earthquake at Northridge, California, in 1994, and Hurricane Katrina’s devastation of New Orleans,

Louisiana, to illustrate their book. The destruction of cultural heritage institutions along the coast of the Gulf of Mexico by Hurricane Katrina spawned many articles and book chapters, some of which can be found in William Miller and Rita Pellen's *Dealing with Natural Disasters in Libraries* (2006). Camila Alire's substantial *Library Disaster Planning and Recovery Handbook* (2000) is based on the experiences of her staff at Colorado State University's Morgan Library in Fort Collins which suffered a major flood in 1997. Such books are useful because no part of the country is entirely safe from large natural disasters and climate change may be making such calamities more frequent and intense than before. It can be argued, however, that by focusing on the big events which require the restoration of whole buildings and the recovery of great quantities of damaged materials, disaster planning is obscuring the fact that most institutions will not have to face incidents of this scale. Even back in 1985, Barton and Wellheiser recognized the potential damage improperly maintained roofs and plumbing could cause but their focus was still on the most obvious form of water emergency, the flood (pp. 12, 43). Perhaps knowing how to recover from a major flood might be helpful to a librarian having to deal with water dripping from the ceiling into her rare books area because of a leaky roof caused by the previous night's downpour. Yet, subsuming the minor incident into the major disaster on the assumption that knowledge of how to plan and recover from the big event can be easily refined to do the same for a small one is debatable at best. A recent publication, Emy Decker and Jennifer Townes' *Handbook of Research on Disaster Management and Contingency Planning in Modern Libraries* (2015) tries to incorporate both.

Part of the problem may be the use of the term 'disaster', which suggests a catastrophic event causing widespread destruction. Dadson (2012) believes that disaster planning focuses too narrowly on preserving materials and instead we should be planning for emergencies—an emergency being defined as any type of incident which impacts collections, buildings, services and people (pp. 6-7). But does 'emergency' convey the same urgency as 'disaster'? The choice of words can be very important. Informing physical plant staff that the library has a leaking pipe on the third floor may result in someone turning up with a squeegee and bucket when in fact hundreds of gallons of water are escaping from a burst pipe supplying the sprinkler system. What is needed is acknowledgement that disasters come in different sizes, some minor and some major, and that there is not a one-size-fits-all plan or response to them. Miriam Kahn's *Disaster Response and Planning for Libraries* (2003) addresses this by dividing disasters into three categories: small scale which concerns 500 items or less, large scale involving more than 500 items and a large part of the institution, and wide area which affects the whole institution or even the city and beyond (pp. 8-9). She acknowledges that determining the scale of an incident is not always easy but at least she recognizes such differences exist and that planning should take account of them. Kay Wall (2006), writing on Hurricane Katrina, also divides disasters into three categories: minor, major and catastrophic. Wall's divisions are simpler in a sense because minor is any incident which the library can cope with on its own, does not impede services significantly, and there is little financial cost; major requires outside assistance, services are severely disrupted and the costs of recovery are significant, and; catastrophic is any disaster where basic infrastructure is destroyed on a wide-scale, ensuring people's safety is primary, and restoration of library services will take months or years at considerable cost (pp. 193-194). And if broad categories are insufficient, the Library of Congress (2009) has developed a chart with twelve levels of emergency depending on the combination of contributing factors which could be used by library staff in training exercises

Whatever terms are used, it is important to go further than simply drawing up a generic disaster plan and trust that it will be helpful in any type of emergency. Libraries need to plan just as well for the small

disaster as the big one, for it is much more likely that the former will occur. Sonya Green and Thomas Teper (2006) note that while the catastrophes make the news headlines, and send shudders of relief down the spines of librarians unaffected, the pages of library journals and newspapers are full of short articles detailing burst water pipes, mold blooms and storm damage to public libraries across the United States but these incidents, while disastrous to the library concerned, do not receive much attention (p. 48). While libraries and archives may be reluctant to publicize such events because of possible damage to their reputations, if the observation above is extended to include all libraries, then it is clear that small disasters are so commonplace that their very ubiquity may be blinding us to their impact. All too often, it is only the occurrence of a small disaster which makes the administration of an institution think about prevention and planning for recovery and, more worryingly, the fact that the incident was relatively small may not lead to any change at all.

Small Scale Water Disasters

Every disaster, big or small, passes through four stages. The first is the prelude, where the conditions or factors that will contribute to the disaster coalesce over a time period which can be short or long. Next is the emergency stage when the actual disaster takes place and this is usually less than a day. The third stage is the immediate aftermath which may include the beginning of the recovery and occurs during the day of, and the days after, the disaster. Finally there is the recovery and restoration stage which can vary in length, depending on the scale of the disaster, from a few weeks to months or even years. Two case studies of small water disasters experienced by the author will be used to illustrate these four stages along with an analysis of what was done well in handling them, the mistakes made, and the lessons learned from each case. Both are typical water-related emergencies—a burst water pipe and a leaking roof—chosen specifically because they could occur in any library and were caused by factors that most institutions will be familiar with. A burst pipe is a singular event which may be hard to predict but has a definite beginning and end which correlate to the period when the pipe breaks to when the recovery is complete. A leaking roof, in contrast, can seem like a never-ending problem which occurs every time there is significant precipitation and the size of each incident can vary. While small disasters in themselves are often memorable events to those who experience them, in fact the causes and the means of recovery are mostly mundane, with very few heroes to be celebrated by the media. Yet, to ignore or dismiss the possibility of them happening may turn any small disaster into an embarrassing media event none of us need or want.

CASE STUDY 1: Ned R. McWherter Library, University of Memphis

Founded in 1912, the University of Memphis is situated in Memphis city and is one of Tennessee's three comprehensive doctoral-extensive institutions of higher learning, with an enrollment of around 21,000 students. The Ned R. McWherter Library is a four-story building completed in 1994 and is the main library among the university libraries, along with four branch libraries situated on the main and Lambuth campuses.

The McWherter Library has had the usual array of incidents but only one disaster remained in the staff consciousness. On February 3, 1996, a pipe burst on the second floor near the periodicals department. Staff member Harriet Alexander (1996) wrote of the event: "It was unusually cold in the McWherter Library that Saturday morning. It would stay cold all day....Suddenly the sound of running water became audible over the usual Saturday hubbub. Not long after, the fire alarm began to bleat, the lights began to

flicker, and then finally stayed off. Emergency lights came on....Thus began the McWherter Library's first disaster" (p.9). The new library was experiencing its first freezing winter and the university's physical plant staff had been monitoring a frozen pipe which supplied the building's sprinkler system. At around 4 p.m., water started flowing out of a janitorial closet, where the pipe was hidden, into the periodicals department and then down into the reference department on the first floor. What Alexander could not have known, and it lends any eerie prescience to her account, is that nearly twenty years later the second disaster would be almost a repeat of the first.

The McWherter Library Flood Redux

Prelude

In January 2014, Memphis was experiencing one of its coldest winters on record. It was not alone for much of the United States was suffering freezing temperatures due to a weather system the media had dubbed the "polar vortex." In the first week of the new year, night-time temperatures in Memphis were below freezing and on Monday, January 6, the day-time high was only 18 degrees Fahrenheit, falling to 10 degrees that night; over 20 degrees below average. The next day, the temperature rose to 29 degrees, and though another cold night was expected, the temperatures for the rest of the week were expected to rise. Warnings had been given frequently through the media that Memphis residents were to take special care of their water pipes at home because of the unusual cold and the coming warmer days, so it was not surprising that references to the 1996 library flood were sprinkled occasionally into staff conversations.

McWherter Library opened as usual on Tuesday morning though there were few patrons. The cold kept some of the regulars away but the majority of students and faculty were not on campus because the Spring semester would not begin for another nine days. Most library staff had returned from vacation and were using the quiet time to prepare for the new semester or to complete projects. Unbeknownst to them, physical plant staff were already dealing with a number of burst pipes around campus. Yet, with the afternoon sun shining outside for the first time in a week, there was no reason to think that the library was at risk.

Emergency

At around 3 p.m. on Tuesday, January 7, the library's building manager was in his office on the second floor when he heard a nearby pipe rattle and pop and then the alarm sounded. The pipe which supplied the sprinkler system had broken and was sending nearly 250 gallons of water per minute out into the stacks of current periodicals on the southwest side of the second floor. This was the same pipe which had burst eighteen years earlier. He called physical plant to have the water turned off, because he is not empowered to do that himself, but it would take nearly 40 minutes before that vital function could be performed. The building manager then tripped the electrical breakers on the second floor, and went downstairs to prepare the reference department and learning commons for the water that would soon find its way to the first floor.

The alarms which were triggered alerted the whole building that an emergency had occurred and very quickly both campus police and the fire service arrived. While police officers remained to ensure security and to keep people who were not library or physical plant staff out, the fire service determined that the situation was being handled adequately and there was no reason for them to remain. In the 40 minutes or

so it took for water to appear through the first-floor ceiling, plastic sheets had been thrown over the computers in the learning commons and the reference stacks began to be covered also. By the time the water began pouring out of the ceiling most of the computers were protected and more stacks in the reserve department, along with the reference desk, were being covered in plastic sheeting as a precaution.

Meanwhile, on the second floor, about three inches of water had covered the carpeted floor of the current periodicals stacks. It was also lapping at the cabinets of microfiche lining the southern wall and creeping menacingly towards the preservation and digitization department as well as the computer stations, microfilm readers and more cabinets of microfiche and microfilm in the center of the second floor. Because of earthquake requirements during the building's construction, foundation piles had been driven into the ground at different levels, which resulted in the floor level sloping very slightly northeast. The flood was following the slope in that direction across the floor. Water had already entered the two classrooms on the eastern side of the floor and the shaft of the service elevator nearby. Microfilm and microbook containers were being removed from shelving in the flooded area by several staff working in relays and stored on library carts on the northern side of the building. By 3:45 p.m., the water had finally been shut off and physical plant staff had arrived to assist in the recovery.

Aftermath

The most pressing problem for the physical plant staff was removing the water which, though no longer flowing from the pipe, was still spreading over the floors. They planned to use squeegees to push the water on the second floor towards the emergency stairwell in the southwestern corner of the building. The preservation librarian directed that the bottom drawers of the row of 24 microform cabinets along the southern wall be taken out in preparation for this work because of the danger of the wash generated by the squeegees being pushed through the water penetrating the cabinets, and these drawers were stacked on the top shelves of the nearby stacks. Periodicals on the lower shelves of the stacks were also put on higher shelves to prevent damage from splashing water or the wash from the squeegeeing operation.

In teams of two, physical plant staff pushed the surface water down the emergency stairwell which slowly ended the relentless creep of the water over the floor, and in about an hour most of the surface water was gone. Water continued to rain down from the ceiling as physical plant staff used the same technique to remove water from the first floor. With much more furniture in the learning commons and also the wiring to contend with, the squeegeeing operation took longer but by around 5 p.m. much of the surface water had been removed. When most library personnel were sent home at 5:30 p.m., there was little obvious surface water on either floor. An announcement from the dean of libraries on the university website stated the McWherter Library would be closed until the following Monday, January 13.

The recovery operation continued through Tuesday night. The disaster recovery company, Belfor USA, was called in by physical plant, since it was a university contractor, and overnight set up dehumidifiers and industrial-strength fans on both floors as part of the effort to remove as much moisture as quickly as possible. These remained for the rest of the week but that was the extent of outside assistance. Physical plant staff continued their work using wet vacuums on all the flooring areas which had been flooded. A freezer truck was ordered to take books which were wet and store them for freeze drying. In the meantime, the wet materials were placed in the loading dock because it was the coldest area in the library.

On Wednesday, January 8, attention moved from removing water to assessing how much damage had been done to the structure of the library: its floors, ceilings and walls. On the first floor, wet ceiling tiles needed to be removed, and the flooring of the learning commons had to be pulled up to allow access to the raceways below to assess damage to the electrical wiring and data cables. On the second floor, the two classrooms had obvious damage to the walls which was considered serious enough to require the removal of about two feet of sheetrock above the floor in this area as well as the baseboards on the walls which had been touched by water. Water had also entered the service elevator shaft near the burst pipe and needed to be pumped out.

There was no question that the carpeting in the learning commons had to be pulled up but would it be necessary to remove all the carpeting in other areas? Was it possible to remove the moisture and clean the carpet tiles without taking them up? After an assessment by the university's environmental health manager, it was determined that the carpet had to be removed because of the high moisture levels but also because it was likely to be contaminated. If possible it would be cleaned and then replaced. It was soon discovered that the carpet which had been taken up during the 1996 flood had been re-laid incorrectly. Instead of being easily lifted, they were found to be glued down with the wrong type of adhesive and many were unsalvageable this time because they were torn or the backing was destroyed in the lifting process.

With ceiling tiles and carpeting having to come out of the learning commons, it became urgent to move the computers to a space where they could be left to dry out. The reserve room was chosen because it was large enough, close by, and could be secured. Also, books and furniture in the reference area would need to be moved, and stacks which had not been covered with plastic previously needed to be protected from the debris which would be generated as the ceiling tiles were removed. Library staff were organized to perform these tasks. Dumpsters appeared at the front entrance to the library to take the detritus as physical plant staff took parts of the building back to its skeleton of concrete, steel and wood.

As the carpet was being removed on the second floor, it became apparent that while flowing water had stopped at the end of the current periodicals stacks, it had still wicked through the carpet into a large area which contained many microform cabinets, a bank of computerized microform readers and computers, and an overhead scanner. Fearing the effects of the high moisture levels, all the electronic equipment was removed from the area. The carpet was tested with moisture meters and it was determined that a row of about a dozen microform cabinets would need to be moved to allow the carpet underneath to be dried. Teams of library staff boxed up the microforms from the cabinets and stored them near the periodicals stacks on the northern side of the floor until the cabinets could be moved back after the carpet was dry again.

While it appeared the plastic sheeting in the reference department had done a good job in protecting most of the volumes on the shelves from the falling water, there were several stacks which may have been exposed to water splashed by people working there. Erring on the side of caution, these volumes were taken off the shelves and placed in an area on the northeast side of the building where they could be opened up and, with fans blowing, left to air-dry. Before they were returned to the shelves, a note was made in the OPAC that they had been in the wet areas in order to monitor their condition.

Apart from the electronics in the learning commons, it seemed McWherter Library had gotten off pretty lightly, especially as regards damage to the print materials. That is, except for about 60 boxed abstracts

stored on the floor in the reference department which were waiting to go to remote storage. The bottoms of the boxes had absorbed water and many of the volumes had moisture on the covers and the outside of the text block. The preservation librarian examined the abstracts where they were stored in the loading dock and decided they could be air-dried since few were very wet. An important factor in this decision was that they were being retired because the resource was available through an electronic database, and thus more extensive preservation was not cost effective.

Despite the admirable efforts of the physical plant staff to remove water and residual moisture from the library as quickly as possible, an ever present concern was the possibility of mold. Environmental health staff measured moisture levels constantly in the building, as well as the print materials in the affected areas and those removed for drying, and tested for mold spores. Though there was no evidence of mold spores two days after the flood, a sporicide was used on the first and second floors on Thursday night as a precaution.

Recovery and restoration

The McWherter Library reopened on Monday, January 13, as planned. The areas which had flooded and were under repair were cordoned off but most services were available. A temporary reference desk now shared space with circulation in the atrium on the first floor. The learning commons remained closed but computers were available to patrons elsewhere on the first floor and on the upper floors of the building. The computers, microform readers and overhead scanner were back in service on the second floor the day after reopening. The two classrooms were still out of commission in the early part of the week but by Thursday, January 16, when classes began across campus, one was available even if it did look like an abandoned DIY project. Thus, some library instruction classes were able to be held there very quickly. The second classroom was useable the following week but it was not fully repaired for weeks. All the books set out for drying were reshelfed but it took much longer to get the microforms back in their cabinets. It was not until the end of January before the learning commons and reference department were fully functional again and that meant furniture from those areas was stored in the government publications department on the first floor for two weeks and the reserve room was unavailable until the computers could be re-installed.

Full library services were restored within four weeks of the flood but it took much longer for the building to again look as it did before the water came through. Walls needed to be repaired with painting and wallpapering to be done, which took several weeks. Because of the loss during the lifting process, there were insufficient squares to complete the re-carpeting of the second floor. The two classrooms had bare concrete floors for months and the floor in the current periodicals stacks did not get carpet until August.

Analysis

What was done well?

The common statement heard around McWherter Library in the days and weeks that followed the event was "It could have been much worse!" The library and university administration commended the quick response to the disaster by library and physical plant staff which ensured the damage was not as bad as it might have been. The volume of water which poured out into the library was considerable and the potential for serious damage certainly existed. What were the factors or actions taken which assisted in

mitigating the situation and allowed the library to sustain less damage in 2014 than it had in the similar event in 1996?

The most important factor in the prompt response of the library to this disaster was that it was not the first time it had happened. The experience of 1996 resulted in there being supplies of plastic sheeting on hand so that the first floor stacks and computers were mostly covered by the time the water penetrated through the ceiling. The reason so many books were damaged the first time was because there was no sheeting on hand. That experience had also led to an important change in the laying of electrical and data cables in the floor raceways of the learning commons after the first disaster. In 1996 the cables were destroyed when water flooded the raceways. When the cables were replaced afterwards, they were run inside conduit in the raceways which protected them from the 2014 flood.

A number of the staff, including the associate dean of libraries, had been at McWherter Library during the previous disaster and knew where the water would go and what was vulnerable. Although there had been changes in the layout of both floors in the intervening years, the learning commons and reference department were still in the same place on the first floor, as were the classrooms and stacks near the janitorial closet where the water erupted from on the second. Having been through it once, the associate dean and other senior staff were able to direct operations more effectively in this emergency also. Having a dedicated building manager was also crucial. The dean of libraries, who had been appointed four years after the first flood, was present throughout the emergency but she recognized her senior staff knew what to do and gave them the authority to do it. Her role was mainly dealing with the university administration and offering support to her staff as they worked through the recovery.

The fundamental design of the stacks which is advocated in all disaster planning manuals was followed: the bottom shelves were four inches above the floor and there were no books on the top shelves which would be vulnerable to water from above. Throwing a plastic sheet over bare top shelves is also easier than if it has to cover books on that shelf which may add another ten inches or so to the height of the stacks. Even the tallest librarians at McWherter Library would have found that height differential troublesome. According to the head of library information systems, the design of the computers and the work stations in the learning commons saved all but one of the computers from water damage. The computer monitors are now much thinner and do not have ventilation vents along the top which are vulnerable to water from above, which was the reason many of the monitors in 1996 were irreparably damaged. Also, by storing the tower cases in compartments underneath the desks, the furniture protected them from falling water.

A building design decision which was also helpful in reducing the impact of the disaster was the laying of carpet throughout the library. The building manager credits the carpet with reducing how far the water spread on both floors. Older disaster planning manuals counsel against the use of carpet in libraries arguing that carpeting will retain water and prevent drainage in the short term, and also make it more difficult to stabilize the temperature and relative humidity of the flooded area (Barton & Wellheiser, 1985, p.12). While the reasoning is sound, the fact is that without the carpet on the second floor the water would have penetrated the preservation and digitization department and the area nearby containing dozens of microform cabinets, microform readers, scanners and computers, greatly exacerbating the situation. The carpet squares, of an industrial type which does not have a deep pile, are laid (or should have been laid) using a system of minimal adhesive and interlocking support so that they can be easily removed for

drying and cleaning. All the saturated carpet was lifted but some areas which had just wicked water were dried and cleaned *in situ* with constant monitoring of moisture levels. Physical plant staff did not open up the enclosed bases of the shelving units in the flooded areas to check whether water had seeped underneath from the wet carpet, insisting the bases would not contain any water and relied on moisture meters to determine they were dry.

Finally, a factor that cannot be overstated is the close relationship the building manager built with physical plant which was vital in the emergency and recovery stages. The building manager knew who to contact for help and the physical plant staff trusted him sufficiently to accept his direction. The result was a much more efficient recovery with no one working at cross-purposes, which can so easily happen during a crisis.

Timing is everything

An element which is not usually mentioned in disaster planning literature is luck, except, perhaps, when it is bad, for it is a library maxim that disasters always happen at night, on weekends or at other times when the building is closed or staffing is at its lowest levels (Kennedy, 2006, p. 90). In this case, the timing of the emergency was not deleterious because it occurred mid-afternoon on a normal working day when most staff were available immediately to respond to the emergency. Another bonus was that there were few patrons in the building because of the university vacation. With classes not starting for a week, there was a window of opportunity for the library to close and focus on recovery only which hastened the process. The efforts of the physical plant staff to remove the water quickly from the flooded areas was vital in the recovery but it was because there had been some earlier incidents of a similar nature on campus that ensured experienced personnel were on standby and could respond as quickly as they did to the library's emergency. Again, it seems the timing was fortuitous.

What was not (but should have been) done?

The important failure in this small water disaster concerned the ruptured water pipe itself. After the 1996 incident, nothing was done to ensure the pipe would not break during another period of freezing weather. It appears to be sheer luck that temperatures in the previous eighteen years had not fallen far enough for the pipe to freeze. But while Memphis is not known for very cold winters, the building's engineers should have taken account of the possibility when the systems were designed and installed. Though the problem was recognized as a design failure in 1996, for some reason no remediation action was taken. Following the 2014 incident, the pipe was wrapped in heat tape and physical plant staff are confident that will prevent a reoccurrence of this particular failure.

Once the emergency began, the most serious problem was occasional breakdowns in communication or simply miscommunication. In the disaster planning manuals, breakdowns in communication are discussed in the context of incomplete or out-of-date telephone trees or email lists. Because most of the people who were required to manage the emergency were already in the library, there was little need to access such lists to contact them off-site. The preservation librarian was not in the library but he was contacted and returned immediately. The building manager did everything necessary to ensure the building was safe to work in during the emergency and recovery, particularly in tripping the electrical breakers on both floors for the areas being affected by water. He also contacted physical plant for assistance and organized the laying of plastic sheeting on the first floor where he knew the water would soon penetrate. The head of

library information systems went quickly to the learning commons to supervise the protection of the computer equipment there. So far, so good but communication is also vital amongst those working during the emergency and its recovery.

The first serious instance of a communication breakdown occurred soon after the disaster began. When the preservation librarian returned to the library and ascertained that the situation on the first floor was under control, he discovered that a group of library staff were gathered near the expanding lake on the second floor uncertain what to do. Some believed there was a danger of electrocution from the floor outlets covered in water. Others said there might be contaminants in the water. The information that the electrical breakers would trip automatically during a water incursion, and that the building manager had already tripped the breakers as a precaution, had not been conveyed. Also, they did not know the burst pipe only carried clean water. Once the staff present were shown there was no electrical or contaminated water hazard, they were eager to assist in moving the periodicals and microforms. There were some staff members who had entered the flooded area on their own initiative on the other side of the flooded section to begin moving threatened materials. Fortunately, this did not endanger their safety and their actions were very useful. In both instances the communication breakdown was unnecessary and pointed to a lack of training in emergency procedures.

It has been noted that few of the library's materials were damaged by the water, apart from boxes of abstracts destined for remote storage. Their temporary placement on the floor of the reference department was clearly a contravention of the disaster plan but the damage to the books should have been confined to the boxes on the bottom of the stack. But mistakes can occur in the confusion of an emergency. When the boxes were discovered and removed from the affected area, the dry boxes were stacked on the bottom with the wet ones placed on top. Instead of only twenty volumes becoming wet, almost 60 had some water damage. A lack of training can also be blamed for this error.

Once the emergency stage was over, for most of the library staff not directly involved with the computers, the closing of the library did not automatically mean they were involved in the recovery, and that is to be expected. The recovery stage should be planned to employ only those staff necessary to carry out the work efficiently since too many hands can lead to chaos. On Wednesday morning, the library administration was busy dealing with the aftermath of the disaster, physical plant staff were working on the structure of the building and environmental health staff were monitoring the environment. But amidst all this activity, the library staff were not told what they should do. Most worked in areas unaffected by the water and thus could perform their regular duties. But there was a need to know what was happening and an equally strong desire to assist. The preservation librarian should have had the information but did not, and that was because of an omission in the library's disaster planning.

The position of preservation librarian was new and the plan had not yet been updated to include him in the recovery team. Aware that books exposed to moisture needed to be moved and air-dried, and boxes of water-damaged books required assessment, the preservation librarian initiated these actions, after consultation with the administration, and recruited staff to assist. The relatively small number of water-damaged books was not sufficiently wet or valuable to require freezing so the dean of libraries was advised to cancel the freezer truck. He also consulted with the environmental health staff on moisture levels, testing for mold spores and worked with the building manager as the recovery progressed. Thus,

while there was time lost in performing some tasks, no materials suffered as a result, and money was saved by not utilizing the freezing option.

Communication problems can occur at any time, even when it appears a task is going smoothly. On the day after the disaster, it was decided that due to water wicking through the carpet under the cabinets of microforms on the second floor, fourteen cabinets would have to be emptied and moved so the carpet could be dried. The building manager marked the cabinets which needed to be moved and the preservation librarian recruited staff members to empty them into cardboard boxes. The team was instructed on how to mark the boxes so the microforms could be easily identified when they were returned to the cabinets, and how to store the boxes in the bound journal stacks. Due to other demands, neither the building manager nor the preservation librarian was able to stay with the team but there seemed no need as the work was proceeding well. When the preservation librarian returned some time later, he found that the team members had changed and they were emptying cabinets which were not marked to be moved. Also, the system for placing the boxes in the bound journal stacks had broken down and the boxes of microforms from different cabinets were mixed up. A week later, when the microforms were being put back in the cabinets, the process took much longer and was more complicated because the instructions to the first team had not been passed on completely to the people who took their place.

What will be done better (next time)

The library did have a disaster plan but it had not been updated to take account of some recent personnel changes, including the appointment of a preservation librarian. But more importantly, while the disaster plan was robust and contained the information necessary to respond to various emergencies, there had not been any training in its implementation. Staff would be expected to read through the plan but there had not been any hands-on training in recovery of materials or practice scenarios so that they could be more familiar with the procedures and challenges of an emergency situation. Taking some discarded books, photographic or audiovisual materials, wetting them overnight and then giving staff the task of trying to recover as much as possible is very instructive. Aside from updating and reworking the disaster plan to take account of changes within the institution, the preservation librarian is recommending that regular training on various aspects of emergency procedures and recovery methods on a semi-annual basis should be required of library staff.

The disaster plan will have to be updated but another recommendation is to have short lists of bullet points available which will address particular emergencies. The plan covers water emergencies and recovery procedures for water-damaged items but this section is too detailed and lengthy to be useful during the event. Breaking out the most important information and having them in electronic form and hard copy posted in locations known to all staff should help end the kind of confusion that occurred during this emergency. The more detailed information is more useful during the aftermath and recovery stages.

Senior staff have vital roles during a disaster but it is possible that some of those people will not be there because they are out of town or unable to reach their institution. There must be people to back them up and to assume their responsibilities if necessary. At McWherter Library, the senior administrators are also the leaders of the emergency management team. This may seem logical but these roles do not always correlate. A manager who functions very well in normal situations may respond differently in an emergency. Some people do not like to get their feet wet while others cannot make the necessary quick

decisions (Silverman, 2007, p. 33). Knowing who is best suited for roles can help determine the composition of the emergency team and some reallocation of positions is another recommendation to the dean of libraries.

A greater focus on communicating with individual staff members must be a top priority for McWherter Library. The emergency team leaders cannot become so involved with the larger issues that they neglect to inform staff of what is going on and how they can assist. Leaders must also articulate the purpose of each task clearly and ensure it is being carried out properly rather than assume everyone understands their role and that situations will not change. Leaders must be visible, encouraging and responsive, and offer regular updates to staff, and that has to continue through the aftermath when normality is seemingly restored. In a small emergency, it is likely that electronic communication will not be affected so regular emails can be used to keep staff informed. But there is no substitute for doing so in person, whether that is individually or with groups.

And while we are improving communications within the library, it is also important to do so with patrons and other stakeholders of the library. McWherter Library issued a statement on its website very quickly announcing it would be closed and when it would reopen but there was no follow up explaining how little was damaged and demonstrating how well and quickly the institution had recovered from the disaster. Libraries must work hard at all times to communicate their services and their value to the outside world, whether that is a university campus or the community. This becomes even more vital following an emergency when patrons may have been inconvenienced and other stakeholders are being asked to help pay for the recovery. We must continue to look outside our institution even as we are focused on the disaster within.

A small disaster, whether it is from water or fire, vandalism or a power outage, does not require a lot of resources to contain or recover from it. The plastic sheeting did most of the work in keeping the stacks dry on the first floor and those stocks were reordered immediately. Some duct tape and a utility knife would have been useful to help keep the plastic from blowing about as people rushed by the stacks during the emergency and the recovery afterwards. Having a number of squeegees available at the moment the water is detected to direct the flow away from vulnerable areas could greatly reduce the damage and portable barriers could also be used to redirect water. These are now under consideration. But the long lists of items the disaster planning manuals recommend to have available for emergency use are impractical unless there is plenty of storage space for them on each floor. At McWherter Library, more attention will be paid to finding the vulnerable points in the building and putting together localized supplies such as paper towels, plastic, flashlights and other basics which address those possible small emergencies in order to supplement the main store.

Finally, an aspect of emergency management which is little discussed is the impact of the emergency on the staff involved (Silverman, 2004). There may be psychological problems because of the stresses involved and the sense of loss when damage has occurred but libraries must also be aware of the possibilities of injury because of heavy and sustained lifting, or health issues from gases, mold and contaminated water. A staff person at McWherter Library who assisted in emptying the microform cabinets along the eastern wall on the second floor noted the next day that her feet had turned an interesting orange color afterwards. The cause was probably rust from the metal cabinets and she did not

suffer any ill-effects but following-up with those involved in the emergency to ensure there are no health problems will be written into the revised emergency plan.

CASE STUDY 2: Mitchell Memorial Library, Mississippi State University

Mississippi State University was founded in 1878 as a land-grant college and is one of the three major universities in Mississippi. A comprehensive, doctoral degree-granting institution, with its main campus in Starkville, Mississippi State University has an enrollment of around 20,000 students. The Mitchell Memorial Library is the main library on the Starkville campus and there are three branch libraries in Starkville and in two other cities. It was first built in the 1950s and since then there have been two additions, the last being twenty years ago. The earlier parts of the building comprise four floors and the 1990s addition is five floors. The archives are split between two floors of the older section. The Congressional and Political Research Center and the Ulysses S. Grant Presidential Library are on the ground floor while the manuscripts, university archives and rare books departments are on the third floor. The stacks of the archives, which are accessed from the third floor, were formerly the stacks of the original library. Each of the six floors of these stacks is half the height of the main floors.

Leaky Roof Syndrome

Prelude

Like many buildings which have been altered or added to over time, Mitchell Memorial Library has had a number of design issues to deal with. One which caused frequent small water emergencies over the years is the flat roof of the older part of the building. Exacerbating the problem is the fact that some of the pitched roofs of the library drain on to the flat roof, adding considerably to the volume of water it must handle and allowing water to stand for some time before it is able to drain away. Stopped drains and small holes in the roof membrane have led to water incursions which have impacted both the manuscripts department and the adjoining archives stacks.

The sixth floor archives stacks are directly under the roof and this floor has suffered a number of water-related incidents but on occasions water has travelled between floors so that the extent and impact of each leak is unpredictable. To illustrate the seriousness of a leaky roof, it is helpful to construct a timeline of the more significant incidents.

1. The most serious event happened in October 1995 when a drainage pipe overflowed into the sixth stacks flooding the floor and the water then moved down the stairs to the fifth floor stacks. In that event, the materials on sixth were not affected because shelves were above the level of the water but some containers on fifth became wet because of water from above. The archival boxes saved the contents which were removed and then air-dried, primarily as a precaution. The temperature in the stacks was lowered until the water and damp materials were removed which assisted in preventing a mold problem.
2. Water from a roof leak in 2004 penetrated the interior of the archives stacks near the elevator shaft, affecting three floors. Falling water made some of the containers on the shelves wet and affected some architectural records also. All the wet materials were taken to the graduate study

area of the fourth floor of the new section, which was closed temporarily to allow the materials to be air-dried.

3. In the early summer of 2008, a roof leak on sixth affected framed theater posters from the university theater's collection. About twenty items were wet and they were removed from the stacks and brought to the archives reading room on the first floor where the tables were used as a temporary conservation area. The posters were mostly protected by the frames but water had leaked into most of them. One team of archives staff carefully removed the posters from their frames, while the second placed the posters between sheets of blotting paper weighted on the sides to keep the posters flat. Fans were brought in to move the air about to assist drying and the posters were checked and the blotting paper changed over the next few days. All of the posters suffered some water staining on the edges but the damage was limited by the prompt action of the staff. Fortunately, only a few of the posters were unique and it was recommended that copies be made which could be returned to the frames and used for display purposes.

There were certainly other less damaging leaks during the fifteen years before 2011. After any heavy rain, it was not unusual to see containers set out on the floor of the manuscripts reading room to catch the drips of water from the ceiling. The workroom next door also had problems from time to time and even the office of the department head was not immune. The roofing contractor would be called by physical plant to look for holes in the roof and attempts were made to patch them but the fix was always temporary. The question for library staff when a storm was expected was not whether the roof would leak but when and how many containers would be needed.

Because of the frequency of roof leaks, the archives staff became skilled at coping with each emergency and preparing for them. Plastic sheeting was stored for use in protecting work spaces and offices. Containers were identified and kept available for when leaks occurred. All the portable fans in the building were identified and could be secured quickly from the various departments when required to help dry out spaces. A supply of towels was obtained to contain and dry puddles of water wherever they might appear, and the library stacks maintenance staff had mops and squeegees on hand to manage larger amounts of water.

With supplies in place, procedures were developed to address an emergency as promptly as possible. Janitorial staff were instructed to look for leaking water after every heavy rain and to inform the building manager immediately. Library stacks maintenance staff conducted regular walk-throughs of vulnerable areas and archives staff also checked the stacks when closing for the day. A phone tree of staff to be called in an emergency, including the dean of libraries, the building manager and department heads was compiled, who then had their own lists of contact information of their staff. The mechanisms for dealing with the leaks were put in place and the fact that little serious damage was done to library materials over the years can be attributed to this preparedness.

Of course, these measures only dealt with the symptoms of the problem. After each event, the dean of libraries would be informed and she would, in turn, press the university administration for a solution. The roofing contractor would endeavor to identify the source of the problem but staff in the affected areas had little confidence that the leaks would not reappear after the next storm. Perhaps because the leaks were seldom serious they were not considered a priority for the university. Certainly the archives staff just

incorporated coping with them into their workflow and none of the emergencies led to library services being curtailed.

Emergency

After each emergency, large or small, was coped with, the question was always when the roof would be replaced; would the university administration finally concede that the quick fixes were not working. In the winter of 2011 there was one week of particularly heavy rain which led to another sizeable roof leak. It had become customary for staff to enter the sixth floor stacks at least once a day to conduct an environmental check if materials were not being pulled. One afternoon it was noticed that water was accumulating at the bottom of a metal staircase which connects the fifth and sixth floors. There was no obvious source on fifth so it must be coming from above. On sixth there was a large pool of water near the stairs which was draining down the staircase. After checking around the sixth floor, it was clear that the water was confined to the northwest corner but where it was coming from could not be determined. Other staff and the building manager were informed of the emergency and a team of archives and stack maintenance personnel joined those already on sixth to assist with the recovery.

The bottom shelves of the sixth floor stacks were high enough off the floor for the containers stored on them to remain dry. Attention was focused on a stack of boxes sitting in water on the floor near the stairs. There was another group of boxes on the fifth floor underneath the stairs, both the product of a chronic lack of storage space. The dry boxes on top were moved away from both areas and then the wet boxes were removed to a space nearby where their contents could be examined and assessed for damage. Staff on both floors worked to clean up the standing water as quickly as possible.

Aftermath, recovery and restoration

In a small water emergency, the stages are much shorter and may concertina together, and as Susan Curzon (2006) has noted, no emergency situation is linear (p. 18). Thus the aftermath and recovery stages melded together. The situation was contained rapidly on both floors and while there was some loss among the contents of the wet boxes, the damage from this leak was not serious because the wet items were waiting to be discarded anyway. Stacks maintenance staff monitored the situation overnight and cleaned up the water that continued to penetrate the area, allowing humidity levels to return to normal. The roofing contractor was contacted by physical plant and the problem was located and fixed. One immediate consequence of the incident was that containers stored on the floor were moved and places found for them on shelves around the archives. The spaces under the stairs were no longer used as storage for materials on the discard list. The most important result, however, was the recognition by the university administration that Mitchell Memorial Library needed a new roof.

A new cycle, or be careful what you wish for...

It took a year before the contract was let for the laying of the new roof but library and archives staff were hopeful that the library's leaky roof syndrome was coming to an end. For weeks the contractors worked on the roof and staff became used to the smell of adhesives and sealants which surrounded the building. The project was well underway when a rain storm hit and more leaks appeared. The library was assured this was because the work had not been completed and they would disappear when the roof was installed fully. The number of leaks did indeed diminish but less than a year later there was a more serious one.

Late one afternoon in the spring of 2013, after some days of rain, an archivist was performing closing procedures in the stacks when he noticed a pool of water near the elevator shaft on the fourth floor. Upon checking the fifth floor, he found more water there. There was no water on the sixth or third floors. The source of the water was a metal beam supporting the fifth floor from which there was a continual drip, suggesting the water had travelled some distance within the building from wherever it had penetrated the roof. The water was not threatening any materials and some towels were used to absorb most of the standing water. The stacks maintenance staff were alerted and they brought mops to clean up the remaining water and supplied more towels to absorb the water droplets, which would be changed regularly. With no further rain, the flow of water dried up after three days but it took several weeks for the hole in the roof to be located where the membrane connected to the walls, and patched.

Analysis

The leaking roof problem was restricted to one department of the library and this had a marked effect on how the problem was handled. The staff of the manuscripts department became adept at managing the results of the leaks with the help of the stacks maintenance staff because each incident was relatively small. While the dean of libraries and the building manager were aware of the problem and did their best to persuade the university administration that a solution needed to be found, on a day-to-day basis the archives were the only part of the library affected. Supplies were stored for the infrequent emergencies but it was difficult to predict where the next leak would occur. Staff training consisted of making them aware of the possibility of leaks, knowing where supplies could be found, and who to contact in stacks maintenance. The archives did learn from the emergencies not to store containers on the sixth floor and that reduced the possible impact of later incursions. But no changes were made to the emergency plan to take account of what was considered a very localized problem. Indeed, the impact of each roof leak incident was so limited that it had no real effect on staff morale or the operations of the department. This was probably the reason the problem was not taken seriously for so long.

Coping strategies

Like many chronic human diseases, leaky roof syndrome requires a coping strategy because a cure is unlikely. It was clear that while the library could expect fewer leaks from the new roof, at least in the immediate future, the roof design made it almost impossible to totally prevent them. Though a very disappointing realization, the library had to ensure the procedures already in place were continued and updated to ensure a prompt response to any future incursions.

Staff awareness is very important in preventing emergencies. Stacks maintenance staff continue to perform regular walk-throughs to check for problems and archives staff do the same. The archives staff have worked there for some years and have experience in dealing with emergencies. However, training needs to be available for new staff in the department since they are the first line of defense when leaks occur. The disaster plan addresses the problem in broader terms but staff need to do more than read a plan; they need to have hands-on experience. Unless all staff know where the supplies are and what to do, small leaks can quickly pose a threat to materials. Emergency management workshops sponsored by the state have been held in the library and they have proved useful in teaching coping strategies and improving the effectiveness of preparation. Holding such training on an annual basis would be very helpful in maintaining staff readiness.

A significant issue in regard to most water emergencies is that despite the presence of janitorial and archives staff in the library during the daytime hours of the working week, there are still many hours when the third floor archives departments and the archives stacks do not have human monitors and that is a serious vulnerability. Water sensing alarms should be a priority on the sixth floor, at least, to alert the building manager when an incursion occurs.

Inspections of the roof membrane and the drainage channels are carried out but they need to be regular and thorough. As the roof membrane ages this becomes even more necessary and a replacement schedule must be included in the university's budgetary planning so this necessary maintenance is not delayed.

The archives has relied largely on stacks maintenance staff to provide the necessary equipment to deal with water from leaks, although a supply of towels is kept on hand along with plastic sheets to cover stacks along with a small wet vacuum. A small wheeled container with basic supplies is worth considering to address water incursions on any floor. Having mops and squeegees stored on sixth would be useful so small amounts of water can be removed quickly before it can pool and move between floors. It has been suggested that the bathroom on that floor, which has long been out of service, would serve the purpose.

Good housekeeping can make coping with an emergency much easier. In order to lessen the damage from water spreading across the floor, there are now no materials stored directly on the floor, even temporarily, on the sixth floor. Due to space limitations, other floors do have some materials sitting on the floor but this is being addressed as new space is made available on second.

The fundamental issue is still the flawed design of the roof. Rerouting the drainage away from the flat areas of the roof would reduce the amount of water but that is an expensive exercise and would impact the appearance of the building. A new floor is planned for the older section of the library building which presents an excellent opportunity to cure the leaky roof syndrome by designing a pitched roof which could complement that on the 1990s addition. It remains to be seen whether this practical suggestion is taken up by the architect. Too often it is assumed by those who will use a building that architects will prioritize the tightness of the building envelope over design but this has proved to be a false assumption. Library administrations need to ask tough questions of architects and engineers to ensure the design will protect their materials. Unfortunately, that input may not be called upon, especially when the library or archives is part of a larger institution, until the important design decisions have been made. In those situations, a coping strategy may be all that can be expected.

CONCLUSION

The small-scale water disasters suffered by McWherter Library and Mitchell Memorial Library have only one thing in common: water. Otherwise they are dissimilar in source, size, impact, recovery time, and frequency. This study has attempted to show that breaking down disasters into size categories can be helpful but even within the category of small-scale emergencies there are significant differences which make it harder to plan effectively. As Ellen Ashbaugh (2003) has noted, there is no common solution to all disasters because each experience is different (p. 18). This fact has not always been acknowledged in the literature on disaster planning and recovery. The reason may be, as Wall (2006) acknowledges, minor disasters are an everyday part of a library's existence (p. 193). Just as earthquakes and hurricanes grab the attention of the news media, they also make much more interesting case studies in library science

literature. There is also a tendency to dismiss the importance of the smaller emergencies because their impact can be limited and most are managed and not publicized. They are hidden in plain sight, despite their frequency across the library community. It is also likely that since most small emergencies befall smaller libraries, simply because they constitute the majority of libraries across the country, they do not attract the same level of attention.

Neither of the case studies is of small libraries but the small emergencies in these two academic libraries certainly did not garner much publicity at the time. There is also a very human response to incidents that do not cause as much harm as expected, which is to push them to the back of our minds as other concerns arise and press for our attention. During the research for this article, it was obvious that many of those who had experienced the emergencies in the two libraries had difficulty recalling details such as sequences of events, unless they had recorded the information close to the time they took place. It is this predilection to forget minor incidents which hinders our ability to plan for them and to fully appreciate their potential for damage. The first McWherter Library flood, for example, had largely receded into university history when the pipe burst again, and the library's emergency plan did not have a specific section on broken plumbing or other small water emergencies despite its broad coverage of emergencies caused by natural disasters and fire. The same is true for Mitchell Memorial Library, where staff experience substituted for detailed guidance from the emergency plan.

This is not to say that contingency management should not try to address the full range of possibilities for each library. Both McWherter Library and Mitchell Memorial Library have attempted disaster planning and have plans which cover the more dramatic possibilities of fire, hurricanes, tornados, floods and earthquakes, with the necessary sections on evacuation priorities and how to salvage damaged materials. But neither is very helpful in regard to the small emergencies described in the case studies. This is probably because they used templates which seek to account for every type of disaster but the focus is on the more dramatic rather than the mundane events. That is only natural, because the bigger events capture the imagination and stay in our collective memories while the smaller ones are quickly supplanted by our everyday concerns.

For both libraries, the small-scale water disasters have been, at the very least, an inconvenience which has diverted staff from other duties, and, at worst, have damaged materials and infrastructure, and interrupted service to patrons. Yet, in both cases, while there was a review of the management of the event, there has been no subsequent effort to update the disaster plan or train staff. That is because the impact of these events was limited, contained and coped with quickly. There was only short-term interruption of service and staff were soon back in their normal routines. It is the fleeting nature of small emergencies which makes it difficult to make people take them seriously, whether they be administrators, staff or even authors of disaster plans. But, as both case studies reveal, staff who have experienced these emergencies instinctively know what to do to contain the damage. Experience also informs the storing of suitable supplies of emergency equipment which will also help lessen damage. The focus of contingency planning and training programs, as well as disaster manuals, should be towards the small-scale first because they are the most common disaster. They are also very different from the large-scale or catastrophic events, not only in planning but also in the resources required. While a library may find it difficult to motivate its

staff to take preparing for a large-scale event seriously, unless they have experienced one, nearly everyone knows what a burst pipe will do in their own home. Taking that scenario and placing it in a library context makes preparing for a similar eventuality much more real, manageable and doable.

There must be greater recognition of the pervasiveness of small-scale disasters amongst libraries. Not only could some be prevented by such awareness but planning and training for the small events focuses attention on disaster preparedness which can then be scaled up for the larger disaster. Let us not obscure the small event by our obsession with the possibility of the larger one.

Future Research Directions

Disaster management and planning is a complex subject because disasters vary in type and size but there has long been an assumption among those who write in the field that planning can account for most events by being “scalable, flexible and resilient” (Dadson, 2012, p. 9). In other words, a plan should be like a Lego set which can be added to and changed as needs arise. But it is almost inevitable that when the general works discuss the kinds of disasters which may befall a library, it is the larger, more destructive events which are used as illustrations. For the average librarian who is more likely to be confronted with the overflow from a blocked drain, this is, at best, unhelpful. There are lessons to be learned from our colleagues whose libraries have suffered catastrophic events which may be applicable to the smaller ones. But librarians have had to look to journal articles for discussions of what they should be preparing for regarding everyday emergencies and what they can do to mitigate them. Therefore, books which break down disaster management and planning into chapters which address differences of scale and resources are welcome.

There is still a place for general studies because they provide a useful overview of the subject. What is also needed are more case studies revealing the problems faced by libraries which are not large academic institutions with sizeable resources because they are only a small part of the library community. A recognition of the diversity of that community and of the kind of emergency those libraries usually face has been an emerging trend in the literature.

Efforts have been made in recent years to encourage smaller libraries to prepare for emergencies, both at the national and state level, including the Institute of Museum and Library Services-funded Connecting to Collections initiative, and the Northeast Document Conservation Center which has promoted the dPlan template which seeks to make disaster planning easier for smaller institutions. The Library of Congress and many larger academic libraries have information on emergency planning and recovery on their websites. What is needed is more research into whether these resources are having an impact on the numbers of smaller libraries doing such planning. More importantly, is the effort of preparing a plan sustained in regular training and review, and how useful is the planning when confronted by small-scale emergencies? More comparative studies of those libraries which have developed emergency plans and those who have not would be useful in quantifying the benefits of these plans during and after a disaster. Although nearly every book or article on disaster planning asserts, probably correctly, that a plan is vital to lessen the impact of a disaster or even to prevent one, there are few statistics to validate this assumption. Perhaps more libraries might be willing to devote time to developing and updating a plan if the gain is based on more than anecdotal evidence.

REFERENCES

- Alexander, H.S. (1996). The McWherter Library flood: A case in point. *Tennessee Librarian*, 48(2), 9-15.
- Alire, C. (Ed.). (2000). *Library disaster and recovery handbook*. New York, NY: Neal-Schuman.
- Ashbaugh, E. (2003). The effect of disasters upon the rural library. *Rural Libraries*, 23(1), 2003, 7-20.
- Barton, J.P., & Wellheiser, J.G. (1985). *An ounce of prevention: A handbook on disaster contingency planning for archives, libraries and record centres*. Toronto, Canada: Toronto Area Archivists Group Education Foundation.
- Curzon, S.C. (2006). Coming back from major disaster: month one. In Miller, W., & Pellen, R.M. (Eds.), *Dealing with natural disasters in libraries* (pp. 17-29). Binghamton, NY: Haworth Information Press.
- Dadson, E. (2012). *Emergency planning and response for libraries, archives and museums*. Lanham, MD: Scarecrow Press.
- Dawson, D. (2009). *Records emergency planning & response for the Alaska State Archives*. Retrieved June 25, 2014 from http://archives.alaska.gov/pdfs/records_management/disaster_manual.pdf
- Decker, E.M., & Townes, J.A. (Eds.). (2015). *Handbook of research on disaster management and contingency planning in modern libraries*. Hershey, PA: IGI Global.
- Egerton, A., Kendall, E., & Resnik, R. (2000). From the bottom up: School library media centers and the flood of 1999. *North Carolina Libraries*, 58(3), 64-66.
- Fleischer, S.V., & Heppner, M.J. (2009). Disaster planning for libraries and archives: What you need to know and how to do it. *Library & Archival Security*, 22, 125-140.
- Floods, fire, mold, and bugs: Disasters in archives. (2007). *Markings: Your Archives Interchange*, 27(4), 1-6.
- Fortson, J. (1992). *Disaster planning and recovery: A how-to-do-it manual for librarians and archivists*. New York, NY: Neal-Schuman.
- Green, D. (1990). After the flood: disaster response and recovery planning. *Bulletin of the Medical Library Association*, 78(3), 303-306.
- Green, S.L. & Teper, T.H. (2006). The importance of disaster planning for the small public library. In Miller, W., & Pellen, R.M. (Eds.), *Dealing with natural disasters in libraries* (pp. 47-59). Binghamton, NY: Haworth Information Press.
- Heritage Preservation, Inc. (2005). *A public trust at risk: The heritage health index report on the state of America's collections*. Retrieved June 30, 2014 from <http://www.heritagepreservation.org/hhi/HHIfull.pdf>
- International Records Management Trust. (1999). *Planning for emergencies: A procedures manual*. Retrieved June 25, 2014 from http://www.irmt.org/documents/educ_training/public_sector_rec/IRMT_emergency_plan_proc.doc

Kahn, M. B. (1993). Mastering disaster: Emergency planning for libraries. *Library Journal*, 118(21), 73-75.

Kahn, M. B. (2003). *Disaster response and planning for libraries* (2nd ed.). Chicago, IL: American Library Association.

Kennedy, T.D. (2006). Steamy situation: Water emergency in Sterling Memorial Library. In Miller, W., & Pellen, R.M. (Eds.), *Dealing with natural disasters in libraries* (pp. 89-97). Binghamton, NY: Haworth Information Press.

Library of Congress. (2009). *A preservation planning tool: Table top planning scenarios, level of collections emergency*. Retrieved June 11, 2014 from <http://www.loc.gov/preservation/emergprep/plan/scenariosII.pdf>

Library of Congress Preservation Directorate. (2009). *Scenarios, Level of Collections Emergency*. Retrieved June 11, 2014 from <http://www.loc.gov/preservation/emergprep/plan/scenarios.pdf>

Matthews, G., Smith, Y., & Knowles, G. (2006). The disaster control plan: Where is it at? *Library & Archival Security*, 19(2), 3-23.

Myles, B. (2000). The impact of a library flood on computer operations. *Computers in Libraries*, 20(1), 44-49.

Northeast Document Conservation Center. (2014). *Preservation Leaflets. 3. Emergency Management*. Retrieved November 17, 2015 from <https://www.nedcc.org/free-resources/preservation-leaflets/overview>

Northeast Document Conservation Center. (2014). *dPlan*. Retrieved November 17, 2015 from <http://www.dplan.org/>

Rentschler, C., & Burdett, P. (2006). Mock disaster at Stetson Law Library prepares staff for a real one. *Florida Libraries*, 49(1), 13-15.

Rice, D.B. (2007). First response to disasters for small museums and libraries. *PNLA Quarterly*, 70(3), 4, 14-18.

Robertson, G. (2005). Water finds a way: Dealing with leaks and floods in your library. *Feliciter*, 54(2), 83-85.

Silverman, R. (2004). A litany of 'terrible, no good, very bad' things that can happen *after* the disaster. *International Preservation News*, 33, 8-15.

Silverman, R. (2007). The seven deadly sins of disaster recovery. *Public Library Quarterly*, 25(3/4), 31-46.

Strudwick, J. (2007). A selected bibliography of library disaster stories: Before, during, and after. *Public Library Quarterly*, 25(3/4), 7-16.

Uhlig, E. (2008). Water emergency at Lane Community College Archives. *Oregon Library Association Quarterly*, 14(4), 12-14.

Wall, K.L. (2006). Lessons learned from Katrina: What really matters in a disaster. In Miller, W., & Pellen, R.M. (Eds.), *Dealing with natural disasters in libraries* (pp. 189-198). Binghamton, NY: Haworth Information Press.

Wellheiser, J., & Scott, J. (2002). *An ounce of prevention: Integrated disaster planning for archives, libraries, and record centres* (2nd ed.). Lanham, MD: Scarecrow Press.

Wilkinson, F.C., Lewis, L.K., & Dennis, N.K. (2010). *Comprehensive guide to emergency preparedness and disaster recovery*. Chicago, IL: Association of College and Research Libraries.