CHAPTER 24

Utilizing Library Storage Facilities in Crises and Disasters

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Plans for transferring material to off-site storage should be well established in order to be prepared for a sudden crisis, especially if the campus climate, like ours, is one of downsizing or reusing space for other purposes.

Introduction

When disaster hits, the academic library may have several tools at its disposal, from preservation departments to third-party restoration companies to intense weeding projects. What may be overlooked, however, is the utility of the off-site storage facility in cases of crisis and disaster. In this chapter, the authors will make the case that not only do off-site storage facilities serve as an emergency resource in crises and disasters, but they should also be considered and closely integrated into libraries' disaster plans to use them most effectively. As knowledge management and institutional history are an integral part of planning and policy making,¹ the authors will recall past scenarios, describe how they have learned from them, and make recommendations based on these lessons.

When talking about crises, it is important to distinguish between crisis and disaster. This chapter considered definitions of disasters throughout library literature² and defined *disaster* as an incident that causes damage to the materials. *Crisis* is more broadly defined as an event or series of events that rapidly change how the library functions.



Off-site storage is defined as a facility separate from the main and departmental libraries, usually in a location removed from campus. The authors will focus mostly on high-density remote storage facilities (the Harvard model), which Walker describes as a facility where items are shelved by size, not by call number, and each item has a unique barcode.³

Off-Site Storage at the University of Pittsburgh

The University of Pittsburgh's off-site facility is formally called ULS-Thomas Boulevard, but internally referred to as LCSU (library collections storage unit). The original building was constructed in 2002 and holds three million items. It is a stark upgrade from the previous facility, known as UPARC, which was prone to flooding and other environmental factors that made it subpar for storing library materials.

This chapter is rooted in the knowledge management model outlined in Islam, Agarwal, and Ikeda.⁴ The authors capture the institutional knowledge, share it in this chapter, and then use these stories to synthesize general suggestions for library managers to use in including off-site storage in their disaster and crisis policies. Sharon Jasneski, the operations manager, and head of LCSU, has worked in library storage for over twenty years and has a wealth of experiences and stories to share, which will help the reader to better understand the potential and additional resilience offered by off-site storage for libraries. She will provide the stories in this chapter. Charlotte M. Johnson, LCSU's librarian, will contextualize these stories within the broader literature and provide commentary and suggestions for other library managers.

Disasters and Prevention

Disasters in libraries take many forms: water (from burst pipes, heavy rains, hurricanes, or other sources), earthquakes, sinkholes, fires, civil unrest, and more. An abundance of literature exists about how libraries handle disasters. Less common is literature illustrating the role off-site facilities play in these situations. For example, when Hurricane Katrina ravaged New Orleans and surrounding areas, Tulane University's off-site storage facility became the headquarters for the material recovery efforts.⁵ Calvert writes of shared storage in New Zealand, "[dividing up the collection among several facilities] also helps spread the risk of loss, simply because multiple stores rather than one reduces the risk of losing everything in a single disaster."⁶ Finally, Teper and Pilette discuss research done in high-density storage disaster prevention for fire-prone regions.⁷

Not only do off-site facilities play reactive roles during disasters, but with the proper planning and measures, they also play a preventative role. Concerns like theft, vandalism, mold, and material decay are examples of disasters that can be prevented with well-designed off-site storage. Off-site storage also lessens the chances of human-related disasters such as theft and vandalism by restricting physical access to the collections behind a security system, thus making sure every item that leaves the facility is accounted for. Climate-controlled facilities with proper HVAC prevent mold spores from flourishing that may have appeared on materials before they went to storage. Off-site facilities' environmental controls, when designed properly, also provide the best climate for the preservation of materials, slowing the deterioration of materials over time.⁸ These preventative measures are especially important if the facility stores archival or special collections, as the facility at the University of Pittsburgh does. Scenarios like these can happen at any time. Here, Sharon recalls the disasters the team has responded to and how they have impacted best practices.

The Thomas Boulevard Flood of 2018

Sharon: "Many libraries have experienced water disasters, especially those located in older buildings with older pipes and leaky windows. In January 2018, the Library Resource Facility, a building housing several library and university departments, experienced a massive flood caused by a broken pipe on the roof. This caused water to pierce the roof in the early hours of the morning when the first employees were arriving, pouring water onto the mostly vacant fifth floor, as well as the fourth floor, which housed archival collections in various states of processing and the University of Pittsburgh Press; several office areas on the third floor, where Technical Services and the Digital Research Library were located; and the Preservation Lab on the second floor. Massive amounts of water poured into these spaces, and water could be seen shooting through a crack on the outside of the building.

"As a member of the Disaster Response Team and a unit head, I was notified early in the morning of the disaster and asked to come in immediately. Each department gathered as many employees as possible and scrambled to move materials, computers, and printers, beginning the clean-up process as University Facilities employees turned off the water. The building manager was able to contact the preservation coordinator, who was (of course) out of town on vacation, and relayed instructions to the people who worked to remove and salvage damaged collections.

"Unlike most of the departments in the building, LCSU was not directly affected by the disaster. However, the preservation coordinator knew that her department, which consisted primarily of students who had not yet arrived to work, was flooded and had no one to work on clearing out the lab and cleaning up the nearly two inches of water that pooled on the floors. The archivists were busy moving their own collections on the fourth floor and assisting the press. Technical Services had many areas impacted on the third floor. IT worked with Technical Services because, in addition to collections, computers and printers were located under small waterfalls. Therefore, several of the LCSU staff and I jumped in and led the cleanup of Preservation.

"I had been a member of the Disaster Response Team for many years because historically where we stored our older material was frequently the home of water tragedies. Having dealt with several of my own at UPARC, I was well versed in the art of interleaving paper towels in wet pages and setting them up with fans for drying. I also had my own cache of preservation materials, like absorbent pads for standing water, plastic sheeting to shield materials from active leaks, fans, paper towels, and a wet/dry vacuum. I also had several 100-foot extension cords on hand. Because our lengthy extension cords needed to accommodate the size of the high-density warehouse, the cords allowed the cleanup crew plenty of mobility.

"At the time, the LCSU consisted of five employees, including me. Two people remained in the department to fulfill the requests for the morning while the other three of us grabbed our wet/dry vacuum, mops from the cleaning closet, and plastic sheeting and headed for the second floor. The wet/dry vacuum we had was the only one available at the time since the two Preservation had were in use on the third and fourth floors. The cleanup ended up taking the better part of that day, and other staff did end up coming to help as we went on.

"There were a few lessons learned. Having a formalized disaster response plan and a team with training or experience is crucial. We benefited from having many people with experience, so the cleanup and recovery started immediately, saving collections and office equipment from further damage. It is also important to have a disaster cache of equipment and tools readily available to anyone. We were fortunate that the disaster happened in the same building as our Preservation Department, but all our libraries have at least a small cache. We could have certainly used more wet/dry vacuums, so more have been purchased."

Recovery at LCSU

Sharon: "There have been times when LCSU assisted Archives and Special Collections with materials in damaged condition, such as books that were encased in vellum and degrading film. One summer, the temperatures on the fourth floor of Thomas Boulevard, where we kept much of the Archives and Special Collections materials during a renovation project, rose to over eighty degrees and the humidity was so terribly low that the vellum books started to warp and twist. Fortunately, at LCSU, we have an environment perfect for paper materials, with a consistent sixty-five degree temperature and a humidity range of 40 to 45 percent, so the books were moved there temporarily until they relaxed and were able to be returned to their department. Additionally, the size of the warehouse means that even if the HVAC is turned off or power is lost for a time, the building's temperature and relative humidity are not going to shift quickly, preventing any mold spores from activating and materials from degrading faster. A shelf of film from a recently acquired collection was suffering from "vinegar syndrome," (a term for when film begins to degrade, releasing a vinegar-like smell) and Archives and Special Collections wanted to put it in a much more stable environment, so LCSU also housed that for a while. We had a lot of available space that we were able to utilize for setting up fans and segregating materials."

As with the first story, water may be the most common culprit of library disasters. Sharon mentions her expertise from other water damage disasters at our previous facility. As this older facility was not built for good storage practices, we suffered from water damage. This is something to keep in mind during facility construction or retrofitting. Administrators need to balance the need for cost saving with the need for preservation and disaster prevention. Poor storage conditions may end up costing more in recovery efforts or loss of materials. A space less prone to disaster also makes off-site storage an ideal place to stage materials during their recovery, as we see both in Sharon's example of rescuing the vellum books and in the case of Tulane University's hurricane recovery. While in our case, the water damage at Thomas Boulevard did not extend to our storage facility, our team was well situated to help. If LCSU itself were to experience any disasters, it would likely be heavy water damage from pipes, smoke hatches in the roof required by city fire code, or fire suppression measures. To prevent these kinds of disasters, staff should constantly monitor for leaks and other signs of damage to the facility, especially during heavy rain or snow melt, and report all leaks immediately to the appropriate building managers. Have the personal contact information of all pertinent parties for when they are not at the site. They should also monitor the facility's temperature and relative humidity to maintain the ideal storage environment: between 50 and 70 degrees Fahrenheit and 30 to 50 percent relative humidity.

Since LCSU holds most of the general collection as well as Archives and Special Collections materials, it is imperative that we take preventative measures against water and other forms of damage. Managers of off-site facilities need to develop good working relationships with those responsible for the building so that early warning signs of damage can be addressed and that when disaster strikes, the culprit is addressed as quickly and effectively as possible. It is also useful to work closely with library preservation staff, who can answer questions about non-paper materials or best practices in stemming disaster-related damage. To that end, managers and their partners also need to have a disaster plan specifically designed for the high-density storage environment if applicable. Pilette points out, after all, that high-density off-site library storage is different from a typical warehouse environment.⁹

Crises

The issue of running out of space to shelve collections has long been referred to as a space crisis, and this is the foundational reason for the invention of off-site storage facilities. For example, Iowa State's facility was built expressly for the emergency of too rapidly increasing collection sizes and not enough places to put them.¹⁰ It was an alternative to compact shelving or building another library. Other crises have also called for the use of off-site storage. During World War II, items had to be moved from the Harvard College Library to the New England Deposit Library in order to make space for training army and navy recruits.¹¹ Snowman describes how Penn State's Annex proved useful when books had to be removed from the main library due to unsafe conditions and explicitly argues:

The availability of space controlled by the Libraries to facilitate phased renovations or rapid response to a structural emergency greatly reduced the expense of these initiatives while maintaining access to the collections. Though not the prevailing reason for implementing a storage program, this has been perhaps one of its most significant benefits.¹²

Even a renovation can be considered a crisis if the deadline is close enough. Take, for example, the four months Duke University Medical Center Library and Archives had to clear off an entire floor for other use by the university.¹³ One of its main strategies was to move materials to storage. Sharon can recall two such crises in recent memory.

Hillman Library Renovation

Sharon: "In 2018, the University of Pittsburgh's Hillman Library began a major multiphase, multiyear renovation project. By the time contracts were signed and schedules were solidified, the contractors were ready to start working, leaving the libraries six months to move 210,000 items before the top floor of Hillman closed for construction. To get as much material out of Hillman as possible, ten to fifteen transport trucks a day were dispatched, each truck holding twelve to sixteen linear feet of material, regardless of whether we could process that quantity. Even with five temporary workers, we couldn't receive, measure, and scan enough items into trays before the next batch came. Approximately 20,000 books ended up being temporarily shelved in a side room until they could be processed.

"At that time, catalog maintenance for transferred materials was not completed by catalogers and metadata librarians, but by Hillman service desk staff who were not formally trained in cataloging. Despite training efforts, we found error rates were around 1 percent—still a large number, considering the 200,000+ items the team processed. Unfortunately, I was the only person providing quality control, and I could not fix all the errors and still get the materials accessioned and shelved in time for the next batch. Many errors persist to this day.

"After the first year, I was placed on the renovation-move team, which enabled us to address some of the problems that we were experiencing. I was able to communicate with the renovation team to reinforce what I thought LCSU could accomplish in a day: how fast could we turn around transport trucks. We also asked Technical Services experts to complete the transfers in the catalog, greatly reducing the number of problems and ensuring a more accurate catalog.

"By the end of the first phase of the Hillman renovation, we accessioned 350,000 items in just over sixteen months. Without the high-density storage facility, we would have had to withdraw a lot of material, including titles that potentially would be used.

"We were not always able to respond like this, though. At our previous facility, UPARC, transferring books to storage was easier and faster. We weren't a high-density storage facility, so processing meant we assigned books an accession number based on the order we received them and placed them on warehouse shelves. Staff didn't need order-picker training, so we could have temporary staff assist with shelving materials. In our current facility, that is not the case. Items are sorted by size, which increases processing time but allows for the storage of much more material. More catalog processing is also required so that books are easily requestable online and retrievable. In addition, we did not previously house special collections at UPARC, but when we moved to Thomas Boulevard, we began collecting special collections and archival materials, and accessioning became a lot more complicated. Suddenly there were more sizes, formats, and types of boxes to store that required different handling procedures.

"Still, the move to the Harvard high-density storage model from the UPARC model was critical because being able to house more and different material while being able to easily request and use collections is necessary. UPARC was a place that the libraries sent materials that they didn't have the heart to withdraw, but that they didn't want people necessarily requesting either. After all, UPARC was fifteen to twenty miles off campus, and there was only one courier run a day. Things were not going to come back to campus quickly. Naturally, it was going to be a fairly dead collection.

"Finally, we could not accomplish as much as we did without our silver transport trucks (figure 24.1). They were designed specifically for use in storage (modified from the wooden carts used at the University of Minnesota), which was the best thing we ever did. Shipping materials in these trucks via a courier with a small moving truck has been key to moving large numbers of materials and keeping them out of the elements. Some of those trucks are now fifteen years old, and they're still working well. It's probably one of the things we've created that I'm most proud of. In UPARC days we boxed everything, which was time-consuming and expensive, as the boxes wear down over time. The trucks can also lock, which is good for transporting special collections safely and securely."

As we see in this story, planning for a transfer project can take much longer than administration may expect: from selection to the logistics of moving off campus to cataloging to accessioning and shelving. We're experiencing the same crunch at the time of writing this chapter, as we move into our next phase of the Hillman renovation. If our libraries didn't have an off-site storage facility, we might be spending a small fortune on commercial storage that would not allow us to provide our patrons with access to the collections.

Thanks to Sharon's institutional knowledge, LCSU has developed a new cataloging and accessioning process and changed our transfer team roster since the first move, and already we are seeing an improvement in efficiency and accuracy. Plans for transferring material to off-site storage should be well established in order to be prepared for a sudden crisis, especially if the campus climate, like ours, is one of downsizing or reusing space for other purposes. As space needs change in the on-campus libraries, we will end up storing most of our collections off-site, and it's important that they remain in good condition and



Figure 24.1 Metal transport trucks are an invaluable part of moving collections to storage

accessible to our patrons. Off-site storage's accessioning process should account for the location of every item, ensuring that patrons can still request materials.

Additionally, when constructing or renovating an off-site storage facility, it is useful to build in staging areas, where large numbers of books can sit on bookshelves or carts while waiting to be accessioned. Having proper equipment, such as the aforementioned silver trucks, on hand for sudden moves is also an invaluable resource, saving money that would be spent on large numbers of plastic bins or cardboard boxes.

The COVID-19 Pandemic

Sharon: "In the early days of the pandemic, the campus libraries closed their doors to patrons, but we kept filling scanning requests and ILL requests, following COVID-19 safety protocols. At LCSU, we were well situated to take on this new way of working, being that we had more space than anywhere else. Staff can easily socially distance in storage, unlike elsewhere on campus. We didn't interact with the public face-to-face and were able to easily shut ourselves off from the rest of the Thomas Boulevard building. It really worked out well: we were slowly able to increase staffing on-site to scan materials as time passed, and we had at least half the collection right there at our fingertips.

"One bonus of being at Thomas Boulevard is that we share a building with our acquisitions department and university mailroom. This meant that all new books being purchased were coming into our building. Faculty needed these books digitized for course reserves, and we had a great overhead scanner. We had never scanned material for reserves before, but it was something that I think we were eager to do because, at least for me, we wanted to feel useful in some way during a trying time. The COVID-19 pandemic can certainly be classified as a crisis since it severely interrupted staff workflows and required a rapid response. The pandemic also contributed to sudden space changes in the libraries. For LCSU, that meant clearing collections from another part of the building to accommodate the University of Pittsburgh's increased shipping and surplus materials activities. This resulted in LCSU installing ranges of "person-height" shelving in our high bay and moving our miscellanea there until they can be addressed."

Pandemic-related literature has already started being published and presented, but none yet specifically about off-site storage. As Sharon says, off-site storage is uniquely situated to provide service during this time of limited services because of it has enough space to remain socially distanced and lacks face-to-face interaction with patrons. Ellero credits the uninterrupted service to patrons at her library in part to the off-site storage facility.¹⁴ While the pandemic still goes on, we are learning what works and how to best move forward.

Conclusion

These stories provide examples of practical application of the benefits of having off-site storage facilities. During a crisis or disaster, off-site storage is invaluable for its separation from the main library, its environmental conditions, and the amount of space available.

For those libraries that already have off-site storage facilities, it is important to consider how these potential benefits will fit into current disaster plans and to plan space usage strategically so these benefits are not lost. For libraries considering off-site storage, the benefits outlined in this chapter cannot be overlooked in the decision-making process. The more libraries can identify their resources and integrate them into their planning, the more smoothly crisis aversion and disaster recovery will go.

Notes

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