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**Disaster October 2004: Lessons learned from
Flashflood at University of Hawai`i at Manoa
Library (Honolulu, Hawai`i)**

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Abstract

This paper examines the lessons learned by University of Hawai`i Library from the 2004 disaster caused by a flashflood. This experience provides preservation education and advocacy opportunities particularly for island or isolated communities. The paper will review lessons learned in disaster planning and assessment; prevention of mold growth; conservation and document recovery contractors; coloration; and treatment.

Introduction

Unfortunately, disasters provide an excellent and compelling opportunity to raise awareness about the importance of Library collections. Having an up-to-date collection disaster plan in place facilitated the University of Hawai`i at Manoa Library's successful response to a disaster caused by a flashflood.

At 8:00 PM on Saturday October 30th 2004 a flashflood carrying mud and debris hit the Library with astonishing force. A seven foot wall of water surged through the ground floor of the Library knocking out walls. The water threw desks, shelving, filing cabinets, card files, etc. against retaining walls in the technical services area, blockading doors with towers of heavy debris. The Library's important map collection, as well as Government documents, the technical services departments (cataloging, acquisitions and serials), as well as the graduate program in Library and Information Sciences were all located in the ground floor.

This paper examines a Library disaster that was localized in one valley in Hawai`i and affected the University Library, but it did not wipe out homes and infrastructure on the rest of island like Hurricane Katrina did in New Orleans. Lessons learned from this experience are particularly important to island communities but can be applied to other Libraries and cultural organizations.

Disaster Plan and Assessment

The Library's Preservation Department has a collection disaster plan in place. The staff has been trained in disaster recovery procedures, and has experience responding to smaller disasters (less than 1,000 books) caused by construction during Library renovation. However, no one was emotionally prepared for a disaster of this scale. Walking around the perimeter of the Library the night of the flood in a sea of mud, the task ahead seemed unbelievably daunting. With thorough knowledge of the collection disaster plan, a first responder's team (Library Administration, Map and Government Document Librarians, the Preservation Department) was able to make essential decisions within the first critical hours of a disaster.

The night of the disaster, the Map and Government Document Library faculty established priorities for recovery. They determined that the focus should be on the 350,000 maps and aerial photographs primarily of Hawai`i and the Pacific region. The map collection was heavily used as a study collection, and it was estimated that 30% (165,000) of the maps could not be replaced and needed to be salvaged for treatment.

At dawn the next morning the staff was in place to assess the damage and to begin salvage of priority collections.

Lesson learned:

- *Having a disaster plan for collections provided a core strategy that was adapted to respond to a disaster of this scale. Well trained staff was able to organize triage and salvage priority collections.*

Prevention of Mold Growth

Hawai'i is 2,300 miles from the West coast of America; islanders have to be prepared to be the first responders. Mold will grow within days in tropical environments and increase the cost and difficulty of recovering materials.

The clock was ticking to freeze materials to prevent mold growth. Four 40-foot and one 20-foot freezer shipping containers were loaded with priority materials from a staging area near the Library building exit closest to the map collection. The maps were removed in their metal drawers and carried outside. The force of the water pushed mud and debris into the map drawers. The rare maps were protected by folders, and the drawers were rinsed in the staging area to remove some of the mud prior to freezing. All the priority maps and aerial photographs were frozen within 78 hours, and there has been no sign of mold damage caused by the disaster.

The Library staff and volunteers rinsed mud off over 5,000 maps and aerial photographs in the first two days. These items were air dried. Many required additional treatment but there was no mold growth.

The Library's electrical circuits were severely damaged and in the main building there were no lights or air conditioning. To prevent a secondary disaster from mold growth to the nearly 3,000,000 volumes located above the ground floor; the Library arranged for a local company to immediately provide dehumidification using generators, and to seal off the ground floor. Because of the damage to the Library building infrastructure, the University's disaster recovery contractor maintained lights and air conditioning using generators for almost one year.

Lesson learned:

- *Taking action to stabilize collections (by freezing and dehumidifying the building) prevents mold growth and buys time to make treatment decisions including selection of a document recovery contractor.*

Conservators and Document Recovery Contractors

Representatives of the large American disaster and document recovery companies descended on Honolulu and in the midst of efforts to salvage the collection. Naturally they were trying to sell the Library and the University their services. It was overwhelming to be bombarded at this critical time.

The University Administration immediately hired BMSCAT, a U.S. disaster recovery company, to salvage and stabilize the buildings. Several weeks later, after the priority collections had been frozen, the Library selected a document recovery company.

Two American Libraries, Brigham Young University in Provo, Utah, and University of California at San Diego sent conservators, and preservation staff to help in the recovery efforts within the first two weeks. Julie Page (University of California at San Diego) provided invaluable experience in determining formulas for replacement costs and establishing the requirements for a disaster recovery company contract. Belfor USA, the document recovery contractor, sent staff to Honolulu to work with

conservation experts from the U.S. and New Zealand were brought to Honolulu (January 2005), and the Preservation Department staff to develop a treatment protocol. Approximately 60,000 maps have been sent to Belfor's facility in Fort Worth, Texas for treatment based on the protocol developed in Honolulu.

While working on the current disaster it was important to look for ways to improve planning and response. Randy Silverman (one of the experts from University of Utah Marriot Library, Salt Lake City) recommended pre-qualifying contractors to respond to disaster. The contractor would have experience working with the Library in advance, and would know the building and collection priorities. Also the Library would be able to review what each company has to offer and not have to qualify a contractor under the incredible stress of managing disaster response.

Lessons learned:

- *The assistance of professional colleagues eliminated isolation and provided expertise.*

Collaboration

A survey of the state of preservation of cultural collections in the United States (the Heritage Health Index) indicated that 80% of libraries and archives in the Western region and American Pacific were not prepared to respond to collection disasters. They did not have written disaster response plan or a staff trained to carry it out. In Hawai'i institutions with disaster plans have not updated them for years and have no programs for staff training. Due to the isolation of Hawai'i, it is essential to develop collaborative disaster recovery planning with Libraries and other cultural institutions in the islands.

The University of Hawai'i Library's Preservation Department is working with libraries, archives and museums in Hawai'i to develop viable disaster recovery plans. In Hawai'i this also means having supplies and equipment on hand. Shipping from the West Coast takes at least three weeks to reach Honolulu.

Lessons learned:

- *Prepared cultural institutions with disaster plans for their collections are able to respond and make local collaboration possible.*
- *It is important to raise consciousness for disaster planning in cultural institutions, and at all levels of government and including NGOs. Recovery of cultural materials needs to be included in disaster planning, and teams of preservation professionals and conservators need to be organized to respond in disaster ravaged areas.*

Treatment

Not having a paper conservator on staff increased the cost and complexity of developing treatment protocols for the wide range of maps, and problems caused by water and mud. Consulting conservators, Mary Wood Lee, Debbie Evans, and FEMA played a key role in developing the treatment protocol.

Recovery of Library and archival collections requires conservators with specialized expertise of paper, photo and/or books. In Hawai`i there is only one paper conservator and she is in private practice specializing in art on paper. Consulting conservators had take leave from their work to assist in treatment of the Library's collections. To improve disaster planning and response Hawai`i needs to have paper conservators on staff.

Preservation Department staff received training in treatment and documentation from consulting conservators. Approximately 10,000 rare and maps of Hawai`i will be treated in the Department's paper treatment lab. Following the disaster, the lab (built in 2000) was upgraded with additional equipment to facilitate treatment and digital documentation of maps and aerial photographs. The treatment of aerial photographs has been set aside until it is determined if the images can be replaced. During treatment of the maps the following unexpected problems have been identified:

- Dye used in many map drawer interior covers is water soluble and permanently stains the maps.
- Many maps were encapsulated in mylar to facilitate their use by students. Gaps in the mylar seal (tape or ultrasonic weld) allowed water into the pocket. In the worst cases (approximately 10%) the seal broke and water and mud saturated the maps. Irreversible damage was caused by the paper expanding within the mylar pocket and surface printing was rubbed off by the friction of mud and paper against the mylar surface.

Lessons learned:

- *Use disaster as an opportunity to develop treatment lab and train local staff.*
- *Conservators are needed in Hawai`i to responsibly care for cultural materials.*