**ABSTRACT**

Animals play a major role in people’s lives. Humans interact with animals in the food chain, train them for entertainment, and often accept them as integral members of their families. Recent disasters have shown the strength of the human-animal bond; for example, a number of people have refused to leave flooded homes without their pets.

Organizations that deal with animal control can play a vital role during disasters. This case study highlights the employment of emergency management principles at a community animal shelter. The study follows the project from initial assessments through the development of an initial emergency program. Key elements in this process include a realistic risk assessment, training, and available local support, as well as economic concerns. Although this does not display a finished product, it demonstrates the initial steps involved in creating an emergency management program for a small public service organization.

**INTRODUCTION**

An entire community is affected by a disaster. Public officials must gain assistance from other jurisdictions and ensure agencies are coordinating efforts. Emergency services, hospitals, and government employees of other agencies must carry out required actions to save lives and property. Media agencies try to gain information to disseminate to the community, business and industry owners attempt to limit damage and resume operations, and citizens deal with the emergency as they attempt to protect themselves and their property.

During the response phase of an emergency, another aspect of the community is impacted as well. Animals, whether they be livestock or household pets, are a significant part of a community, not only due to their economic worth but in terms of families’ emotional ties to them and the impact these factors can have on response and recovery efforts. For these reasons, the role animals play during disasters must be considered in any emergency management plan.

Corvallis, Oregon, a city in the Willamette Valley and home to Oregon State University, has considered this. The city’s Heartland Humane Society (HHS) provides animal control as well as rescue and adoption services. This case study provides an overview of the process of establishing an emergency plan for HHS that will also provide additional support to the community.

The emergency plan for HHS was developed with a holistic approach to emergency management. The all-hazards model of addressing mitigation, preparedness, response, and recovery was employed. Using these aspects, an inside-out approach was taken so as to address the safety of animals, facility workers, visitors, and the community as a whole.

**ANIMALS IN DISASTER**

Animals can create a myriad of concerns for emergency planners. The Emergency Management Institute provides information regarding these issues. Zoonotic diseases are those which can be transferred from animals to humans. This transmission is most likely to occur when drinking water is contaminated with animal waste or remains. Examples of such diseases include but are not limited to:

- coliform bacteria;
- salmonella;
- campylobactor;
- giardia;
- ringworm;
- rabies;
- vector-borne diseases (e.g., equine encephalitis);
- Clostridium botulinum; and
- anthrax.

Animals, especially dogs, can pose a significant physical threat to the community following a disaster. Dogs that are normally docile may attack under the stressful conditions of a disaster. Large numbers of dogs may be roaming communities following disasters. These dogs may be stressed, injured, and carrying disease. This poses a threat to citizens as well as first responders. Animals that are killed during a disaster also pose a significant risk, since decaying remains create biological hazards, attract insects (flies) and rodents, and contaminate groundwater.1

In addition to public health concerns, the loss of pets can adversely impact the mental health of their owners and, in some cases, cause owners to place their own lives in jeopardy. For many people, pets are considered an integral part of the family unit. Property loss following a disaster, compounded by the loss of a pet, can place considerable stress on mental health. In some cases, concern for pets can lead to loss of life. Several cases are documented in which people have been killed while trying to rescue their pets or returning to unsafe areas in search of missing pets. Emergency planners must be aware of these concerns and the resources available to assist in mitigation of these hazards in response and recovery efforts following disasters. Local Humane Societies can play a vital role in this effort. In order for a facility to be effective, however, it must have internal policies and programs in place to support its own sustainability and its ability to cooperate with other agencies and organizations.

**HHS EMERGENCY PLAN**

*Hazard and vulnerability assessment*

The initial step in developing an emergency plan is determining the hazards calling for the greatest concern. For HHS, these hazards were categorized as regional, community, and facility hazards. Regional hazards were determined to be a major earthquake and flooding. Community hazards included flooding, hazardous chemical spills/releases, community evacuation, and power outages. Facility hazards were identified as 1) evacuation, 2) hazardous chemical spills/releases, 3) power outages and utility failures, 4) fire, 5) medical emergencies, 6) disturbed persons, 7) security issues, and 8) animal-borne disease outbreaks.

Regional hazards assessment included a review of possible natural and man-made disasters. The Pacific Northwest has a history of earthquakes—there was an earthquake in the Seattle area only a few years ago. Volcanic activity in the Pacific Northwest is also a known danger, but Corvallis lies out of major damage zones. The Willamette Valley has a history of flooding, as well. Man-made regional disaster hazards were listed as minimal. The closure of Trojan Nuclear Power Plant in the late 1990s removed concerns (however minimal) over nuclear hazards; a small test reactor operated by the Nuclear Engineering Department at Oregon State University was reviewed. Inherent safety designs, minimal core loading, security controls, and tracking efforts by the Nuclear Engineering Department and Oregon State Police can effectively mitigate a major threat. No likely terrorist targets exist in the immediate region, and there are no significant federal buildings or facilities in the area; the next major city, Portland, is approximately 85 miles away.

Community hazards assessment presented more worries. As with the general region, Corvallis itself is susceptible to flooding. HHS lies within the 100-year flood plain. Due to its vulnerability, plans needed to be developed that addressed not only community flooding but possible evacuation and loss of utilities at the HHS facility.

Rail lines from the coast, Eugene, and Portland pass through Corvallis. These lines, passing within
50 yards of the facility, created hazard concerns surrounding train accidents, particularly hazardous material spills or leaks. In the event of flooding or a hazardous chemical release, portions of the community, as well as of the facility, might require evacuation.

Other community hazards were also assessed. These included the loss of power, electricity, and/or water services.

In addition to emergencies taking place in the region or community, the facility also needed plans for internal emergencies. These plans covered several hazards, including those mentioned previously, such as evacuation and utility failure. Fires, medical emergencies, and disturbed persons on the facility grounds were also assessed as hazards.

Several of the hazards mentioned would require evacuation of the facility. Distinctions were made as to whether the evacuation required would be controlled or uncontrolled. These evacuation plans addressed both animal and human safety. In addition to a chemical spill/HAZMAT accident outside the facility, chemicals held on site were also evaluated and incorporated into the planning. Loss of utilities hazards could result in issues regarding drinking water, heat, and light. In addition to these hazards, a walk-through of the facility and discussion with the director highlighted other hazards, as well.

Fire hazard evaluation brought up concerns. The facility used a large industrial dryer for all linens at the facility. Soiled and clean linens are both stored next to this dryer. In the event of a dryer fire, these linen items would provide fuel for the fire. Additionally, no remote shut-off other than the breaker box was installed. If a fire were to occur, toxic gas and smoke could rapidly incapacitate animals and workers alike. Evacuation could be hampered by poor emergency lighting and the lack of additional evacuation markings (such as fluorescent tape).

Medical emergencies can occur at any time. HHS deals with animal control and receives strays on a regular basis. This could pose a hazard to staff, volunteers, and visitors. Plans were developed to improve first aid capabilities and coordination with emergency service personnel.

Finally, the facility director mentioned concerns over disturbed persons. She had read of attacks on Humane Societies and shelters. An example of a basis for such an attack could be a disgruntled pet owner who has recently had animals removed from his or her home by authorities. The facility had no plan to covertly warn staff and volunteers of such an event.

**Mitigation and preparedness efforts**

Once hazards were identified, plans were made to mitigate these hazards and develop response plans. These plans were based on hazards, vulnerabilities, possibilities of community support, and financial issues. Each hazard, or its potential outcome(s), was addressed, and mitigation suggestions were provided.

**Flooding.** There are both human and animal safety concerns with flooding. Human factors concern visitors, volunteers, staff, and the community as a whole. Information from local government and weather services was used to provide criteria for closing the facility to nonemergency personnel. This would prevent visitors from being endangered and allow staff and emergency volunteers to direct their efforts toward the removal of animals if facility evacuation were required. Additionally, volunteers could also take part in forming animal rescue teams to assist EMS personnel and coordinate with other animal care organizations.

Flooding may result in either an influx of animals to the facility or the evacuation of the facility, depending on the location of the flooding. For the case of facility evacuation, several factors were evaluated. First was the physical evacuation of the facility, which will be covered as its own plan. Second, the temporary housing and fostering of animals was addressed. Foster care homes were identified. Of concern, however, was the location of these homes. Recommendations were made for focusing on homes that lay outside the flood plain. Cross-referencing of volunteer addresses with GIS overlays of flood plain data provides an effective means of accomplishing this task. A simple tracking program was recommended in order to track foster homes and animals. Food and medicines are required for these animals, and recommendations were made to provide each foster home.
with one week’s worth of food and necessary medicines, an amount that the facility keeps on hand. Agreement contracts (memorandums) were recommended as well. These contracts could be discussed with Oregon State Veterinary School, local kennels, and transportation companies. Contracts would allow for mutual assistance in the housing of animals following mass disasters or individual facility incidents.

On-site animal safety was addressed. A good record keeping and animal tracking program was already in place, which allowed for more efficient staging of animals for evacuation. In cases where animals could not be evacuated, plans were proposed to use the upper floor, currently divided into office spaces, as a location for animals, supplies, and equipment. Another flood concern was the facility’s Material Safety Data Sheet (MSDS) records. These were provided to local emergency services.

**Hazardous material spill/release.** This event would most likely result in an immediate evacuation of the facility. Recommendations included coordination with the public health department in planning for possible mass animal casualties and the resultant need for disposal of remains.

**Utility failures.** Utility failures would result in closing the facility to the public. Animal safety issues would still exist, however, such as the provision for environmental control and fresh water. Foster care and the mutual agreements previously mentioned would be enacted for those animals most susceptible to harm or illness. Alternate power supplies for heaters and fans were recommended, but this was not financially feasible; fortunately, the Pacific Northwest is not prone to extreme temperature conditions. Also recommended was a calculation of minimum daily water usage. Once calculated, 72 hours’ supply was recommended to be stored on site.

**Fires.** Fire posed a threat to humans and animals alike. Major concerns surrounding fire hazards were the dryer, smoke and toxic gas dangers, and evacuation problems. The industrial dryer posed the most major fire risk to the facility. Recommendations for mitigation included installation of a localized sprinkler system in the vicinity of the dryer and installation of a remote shut-off switch.

Several features made the threat of toxic gas and/or smoke a serious concern. The open structure (no doors in animal areas or laundry) could promote the spread of smoke and gases, while the linens and the paint on the brick walls could be sources of toxic gases. Mitigation recommendations included the purchase of smoke blankets to be stored in key locations to limit the spread of smoke and toxic gases.

Evacuation during a fire is also an issue. To address human concerns, an all-hazards evacuation plan was created. One mitigation factor was recommended specifically for evacuation during a fire, however: the use of fluorescent reflective tape to indicate exit routes.

Even in the case of the immediate evacuation of humans, animal safety is still a concern. At HHS, each kennel has a door to an individual outside run. Although simply allowing the animals to move to an outside run may not be a 100-percent effective answer, it would lessen the impact of toxic gases and heat. With this in mind, it was recommended that a mechanism be created to allow for remote operation of all doors. Other animals, such as rodents and cats, do not have runs. Unfortunately, no recommendations other than removal by staff were provided for the evacuation of these animals. This places the staff in danger, while simply opening their cages could prove dangerous to emergency services personnel and could potentially lead to a public health and/or liability issue.

Another mitigation option was limited firefighting training for select staff. Tualatin Valley Fire and Rescue (TVFR), near Portland, provides courses in basic fire chemistry and extinguisher operation, as well as first aid. This training would not be conducted with the idea of having staff combating major fires; the goal would be to enable the early extinguishing of fires and to gain a better understanding of the dangers associated with fire.

**Medical emergencies.** Recommendations provided for medical emergencies were ensuring staff personnel were first aid and CPR qualified (both the American Red Cross and Oregon State University offer courses) and that an automatic electric defibrillator (AED) be purchased and kept on site.
Evacuation. Many incidents could lead to facility-wide evacuation. Evacuations were categorized into two types, controlled and uncontrolled. Controlled evacuation would be conducted when adequate warning was provided. Uncontrolled evacuations would take place when immediate hazards to life occurred unexpectedly. Key aspects of evacuation plans involved being able to account for staff, volunteers, visitors, animals, and records.

Response/recovery

Templates for emergency action (EA) plans were created. These plans were presented to cover hazards mentioned in the previous sections. They are meant to be contained in a binder and tabbed for quick reference and study by staff and volunteers. The “forms” mentioned in EAs are administrative forms. These plans also incorporate supplemental steps that will aid in recovery operations.

Maintenance of programs

In order for the plan to be effective, it is necessary to frequently review plans, agreements, and hazards. Recommendations for maintenance included becoming more involved in the community’s emergency management framework. Drills were also recommended. Facility drills incorporated medical emergencies, disturbed persons, and evacuation scenarios. Cooperation and coordination with community EMS organizations was also proposed, to improve working relationships and to ask for incorporation of HHS in established community-wide scenarios.

CONCLUSION

These efforts did not yield a finished product. As with all emergency plans, those discussed here will continue to grow and change. This is the result of several factors, including community change, the level of public and government support, new hazards, and technology, to name a few. The goal of the emergency plan for HHS was to establish a baseline of awareness and planning, so that HHS could sustain itself and support the community following a disaster.

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REFERENCE

1. Animals in Disaster, Module B, Unit 5.