

How to Develop an Equine Veterinary Facility All-Hazards Sheltering and Evacuation Plan

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1. Introduction

Natural disasters (flooding, wildfire, blizzards, high-wind events, earthquakes) and local emergencies (contagious disease outbreak, barn fire, HAZMAT evacuation, power failure) can detrimentally affect equine facilities with unpredictable frequency, but often occur relative to geographic location or climate (Fig. 1). Facilities that plan and prepare are more capable of overcoming the challenges ahead in a more organized and predictable manner. *"In preparing for battle I have always found that plans are useless, but planning is indispensable."* —Dwight D. Eisenhower.

Realization that this applies to everyone just comes down to simple math. An owner responsible for eight horses, owning a three-horse capacity trailer that must move their horses 100 miles to safety—it would take minimum three trips and 500 miles of driving to evacuate all the animals. Extending the math, in normal 55-mph traffic, that's 9 hours of driving (not including fuel and bathroom stops, loading and unloading at both ends, coordination face to face, and evacuation traffic speeds). At 20 mph, that would be 25 hours—a full day to evacuate (assuming law enforcement allows return

trips). When owners and veterinarians become aware of these vital statistics, they become champions of planning for disasters for their businesses.

Risk identification, reduction, and mitigation of disaster affects on your clinic start with a specific written plan for an all-hazards approach to sheltering and/or evacuation as crucial parts of effective equine facility management. Practitioners need to develop effective and efficient plans for their own business, setting the example for their clients and giving the veterinarian personal experience, which makes them better able to advise their clients. Thereby, they increase the resiliency of their entire agricultural community by integrating animal issues into an overall emergency management strategy for the community.¹

Domestic horses are totally dependent on humans to care for them, especially in emergencies and disasters. When humans took horses out of the wild and placed them in confinement for convenience (Fig. 2), we took away their ability to use millions of years of evolutionary skills and instincts to keep them out of danger dealing with predators and innumerable disasters. In the wild, horses can pick the safest place to get out of storms, run away from

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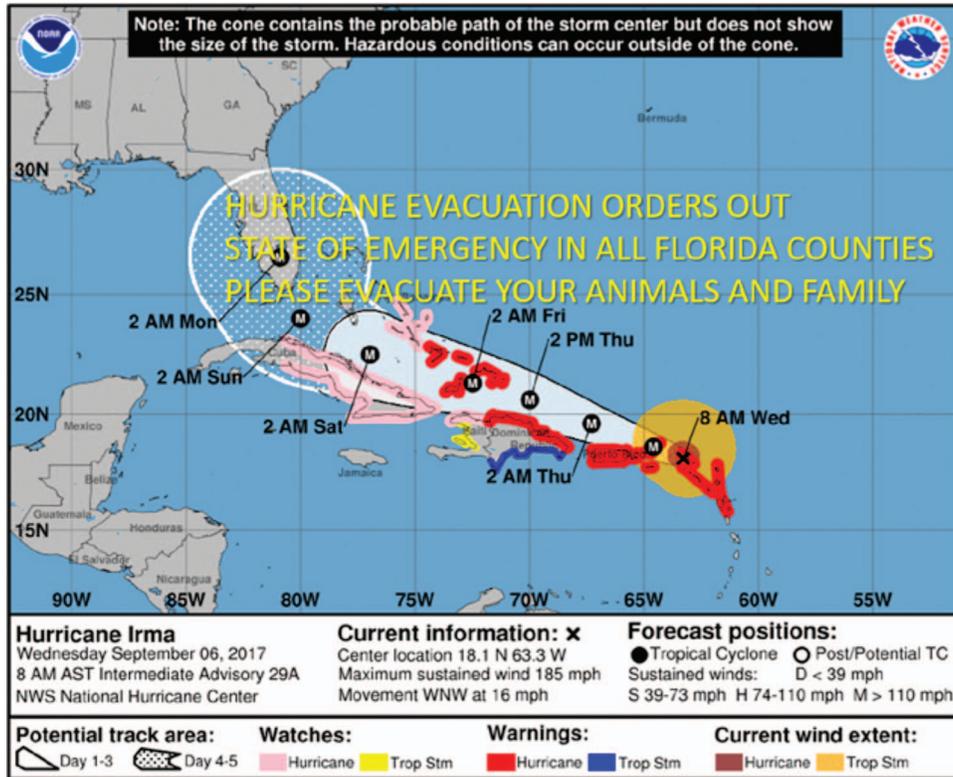


Fig. 1. Example of strategic communications messaging produced and distributed to social media outlets as a press release to assist in motivating Floridian animal owners to evacuate early ahead of Hurricane Irma, based on predictions produced by the National Weather Service, for September 6, 2017. Photo courtesy of Rebecca Gimenez.

wildfire and flood, or patiently endure the blizzard and dig for food through the snow. In the modern world, they have no freedom to get out of fences and stalls when threatened. In a December 7, 2017 wildfire incident in California, 30 horses padlocked in their stalls at the barn did not survive the fire.² Early evacuations are key to ensuring these tragedies do not occur, and humans must do the planning and facilitation. A plan is far more comprehensive when done ahead of time instead of under duress in the face of a disaster.

No matter the size of your facility—whether treating backyard horses in a pole barn or managing an attached barn with a treatment clinic featuring high dollar show horses, facility owners are expected by their clients to have evacuation or shelter-in place plans for every conceivable type of disaster. Realistically, having specific disaster plans for every imaginable and unimaginable imminent disaster is difficult, expensive, and ranges into the impossible. This paper will highlight simple ways to implement plans for disaster mitigation and response for a facility of any size, which can be built upon as the clinic gains experience then complements services and features.

2. Materials and Methods

Preparedness for emergencies and disasters involving horses must begin at the local level as a two-

pronged effort: 1) animal facility owners taking responsibility for animals under their care, and 2) emergency services management personnel preplan for evacuation and sheltering considerations of large groups of animals within the civil jurisdiction, state or region. Planning for all hazards' "worst-case scenario" (Fig. 3) incidents will expand community awareness for disaster scenarios, and may even dictate the future of the practitioners' business success. Example: before Hurricane Irma (2017) it is estimated that 20,000+ horses were evacuated out of South and Central Florida, along with over 6.5 million people living in mandatory evacuation zones. In an unprecedented action, the Florida Department of Agriculture and Consumer Services, Division of Animal Industry, temporarily suspended intrastate movement requirements for the transportation of animals from Florida, and border states waived their interstate import requirements for pets and livestock leaving the expected impact areas of Hurricane Irma. This allowed veterinarians in the state to concentrate on disaster preparation and mitigation for their businesses, instead of fulfilling innumerable health certificates for travel.

There are two levels of disaster preparedness for each facility to achieve:

1. Personal preparedness (the practitioner's staff and family is capable of taking care of



Fig. 2. Animals in modern enclosures cannot escape flooding, wildfire, or barn fires. This is just one of the thousands of horses that were found dead in their stalls post-Hurricane Katrina (2005) across Louisiana, Mississippi, and Alabama. Failure to evacuate to high ground ahead of large storms causes agricultural losses in all aspects of the industry. Photo courtesy of Jay Addison.

themselves, their loved ones and personal animals) to be able to evacuate, or shelter in place.

2. Business preparedness (resumption/contingency planning for the practitioner's facility as a business, whether a horse boarding facility, veterinary clinic, and/or breeding farm.)

It is not always the impact of the original event that is worse, it can be the chaos, confusion, and forced change in routines that occur afterward. For example, if a geographical area that normally does not receive winter precipitation is subjected to a heavy snowfall or ice, access to these areas will be restricted and livestock may go without hay, feed, or water. Long-term damage to roads and bridges from flooding makes travel to animal locations impossible due to impassable roads. Or, if a reportable disease was brought into your treatment facility and resulted in quarantine of all animals housed there, how would that affect your daily business (Fig. 4)? For example, in 2016 the University of Georgia Large Animal Veterinary Teaching Hospital was quarantined and shut down for cleanup from an equine herpesvirus-positive horse for 20 days.³

Legal action from clients can threaten the business itself, and should be part of business resumption and continuity planning. Example: Colorado

State University's (CSU's) Equine Reproduction Laboratory caught on fire in 2011 (Fig. 5) and highly valuable genetic material was not able to be saved from fire damage. Insurance did not cover the cost of genetic material destroyed in the fire, but breeders who lost frozen embryos, sperm, and eggs were offered a \$1,000 credit for future reproductive services by CSU. One client sued in the amount of \$1 million dollars for damages in loss of frozen semen in the fire, and it went all the way to the Colorado Supreme Court of Appeals for resolution.^{4,5}

It is the practice owner's responsibility to have a functional disaster plan to care for personal needs (family) and clinic staff and patients (business). Don't forget a crucial part of the resiliency built into a plan is to ensure their members have a solid plan for their own families and animals so that they can assist with business planning—in so many past disasters where the plan was built on having staff present—the employees end up solving their own issues, they were not available to help. This has happened to numerous communities that depend on police and volunteer firefighters—they were so tied up unraveling the disaster impacting their own family that they didn't report to work. Client horse owners will expect the clinic/facility owner to have a functional disaster plan, they should expect to sign a waiver with the details of how it is expected to solve evacuation or shelter-in place issues as a part of normal board and care.



Fig. 3. Flooded paddocks in California prevent normal turnout and exercise for horses housed at equine clinics and boarding facilities during record flooding (2017). Depending on floodwater speed and volume, duration of flooding, and impacted surrounding environment—the animal pastures and other holding areas will contain hazards such as damaged fencing, chemicals, obstacles, and sewer run-off. Photo courtesy of Rachel Coursey.

The plan should consider how would operations at your reproduction barn, or the daily horse management at the clinic be affected if power was lost for just one day? What if the outage lasted for a week? What is the plan when power goes out during the bone-chilling grip of winter—to provide fresh water, power, sufficient forage and care for animals under a vet clinic/farm manager's care? In a drought or extreme heat? Local emergencies of this type are very common and should force responsible practitioners and horse owners to think through the various aspects for durability of animal care (and continuity of business).

Self reliance is a crucial part of domestic emergency management policy. Civil jurisdictional emergency management officials may provide assistance to affected animals and clinic owners in the geographical disaster area, but only after providing life safety to humans as their main priority. Hours, days, and weeks will go by before animals move up the priority list for response actions. Thus in reality, practitioners and facility owners should take personal re-



Fig. 4. Clinical equine veterinary facilities can provide biosecurity for client's horses in the event of an outbreak of contagious disease—a potentially disastrous situation that the average client doesn't have expertise to effectively manage. Biosecurity procedures are practiced on a daily basis to prevent spread of disease in clinics and treatment centers around the world—the basis of any disaster plan for diseases. Photo courtesy of Dr. Ashley Whitehead, University of Calgary Veterinary School, Canada.

sponsibility to prepare a plan. Don't expect others to evacuate/attend to animals under your care—this is a potential litigation issue. Representatives from the veterinary industry and horse owners should be included on local emergency management planning committees to communicate the problems animal owners encounter, their options, how they affect the community, and provide timely and factual information (location of shelters, proactive actions, disease outbreaks, etc.) to the media. These proactive actions by practitioners can minimize the amount of time and expense to bring equine clinic operations back on-line and increases goodwill with your clients that will need your expertise after the disaster. Good plans preserve more of the facility, equipment, most valuable animals, as well as the clinic owner's peace of mind. Making these "emergency" practices and prevention procedures a part of your daily routines at a facility soon builds other benefits—"practice managers noticed improvements



Fig. 5. CSU Equine Reproduction facility burned to the ground on the morning of Jul 26, 2011. All horses in the barn were evacuated successfully when the fire was reported at 1:00 am. The blaze caused approximately \$12 million in damages to the facility. Clients took legal action against CSU when they discovered the loss of highly valuable preserved semen and embryos destroyed by the fire. Photos courtesy of Poudre Fire Authority, Colorado.

in efficiency, confidence in their ability to respond appropriately, and increased efficiency born of a workable schedule.^{7a}

A literature search found few studies of emergency management planning for horses, horse facilities, or equine veterinary facilities. One survey of horse farms in Madison County, Kentucky, collected data about equine evacuation planning, in case of a natural disaster.⁶ Farms ranged in size from 0.5 to 500 acres, nine breeds of horses and 65.5% commercial. Most farms had multiple sources of water for livestock, and some kind of shelter for horses. None had experienced an evacuation, but 11.5% had plans developed. All had some equipment for evacuation, but help would be a problem in on 57.7% of the farms. Estimates averaged that five horses at a time could be moved from the farms to a wide variety of evacuation sites; family-owned land, 25.9%; friends, 29.6%; boarding stables, 11.1%; a designated evacuation area, 7.7%. If horses were to be left on the farm their concerns were water and feed (61.5%), survival and wellbeing (26.9%), none mentioned theft. From a safety standpoint, only 70% of the horse owners/managers considered their families first priority, and animals secondary.

Other studies found that people who leave pets behind during disasters tend to be less responsible owners in general, scoring lower on pet attachment scales and often failing to provide normal vaccination, sterilization, and annual vet care for their animals. Approximately 30% to 50% of pet (cat and dog) owners leave their pets behind during evacuation, even with advance notice to leave.⁷ (There are no published studies for horses.) Many of these same owners later attempted to “rescue” their animals, ignoring security barriers, in order to provide food and check on them. On the other hand, even under mandatory evacuation, some people will not leave their animals, and some have died making this

choice.^b Survey of emergency managers have shown that in states where large disasters occur more frequently, people have better plans for their horses and pets. These studies give veterinarians, emergency responders, and managers a perspective into the challenges faced in getting the equine community involved in disaster planning and client education.

Lessons Learned From Hurricane Katrina for a Successful Equine Disaster Response.⁸

- Animal response activities need to be coordinated locally, regionally, state-wide, and nationally through the use, as much as possible, of the National Incident Management System’s Incident Command System.
- Communities should be educated on means to work together to establish community-wide disaster response plans that include animal management considerations. Veterinarians are crucial to this process.
- Incident Command System is important for successful disaster response, personnel flexibility, and communication at all levels of the response is also important.
- Even though state and local jurisdictions are required to participate in the National Animal Plan, Incident Command System leadership should anticipate that most volunteers will not have a working knowledge of disaster management procedural processes. State, regional, and local leadership must develop processes to effectively use minimally trained volunteers during disaster response.
- During any disaster, a public information officer must be appointed to process, filter, coordinate, and provide consistent and accurate



Fig. 6. Graphical example of FEMA emergency/disaster cycle: Prevention/mitigation leads to better preparation, which provides a better coordinated response to the disaster, followed by an efficient recovery. Photo Courtesy of FEMA.

media releases on a daily basis, at every level (businesses included).

- The animal-owning public and animal care professionals must be encouraged to have an evacuation plan for their families, including their pets and other animals.
- The animal-owning public must be encouraged to obtain knowledge of and become involved with local and regional disaster activities critical for future disaster responses.
- Permanent forms of animal identification should be encouraged to assist with accurate animal recognition and owner-animal reunion.
- Disaster responders and veterinarians must realize that the immediate goal during disaster response efforts is to provide basic animal medical and husbandry needs.
- Potential disaster assistance volunteers should be encouraged to undergo Incident Command System training, so they will understand and appreciate how working outside of this system hampers response.

The Federal Emergency Management Agency (FEMA) encourages civilians to understand that lessons learned from past disasters (such as above) should feed directly into the emergency/disaster cycle (Fig. 6) by prevention/mitigation, preparation, response, and recovery. All community members have a vested interest in improving resiliency in this manner—collaboration among the public and private sector to create mitigation plans and actions can reduce the impacts of natural hazards. As a leader and rational voice for animal issues, practitioners can provide the best advice when planning is ongoing in a community (through Community Emergency Response Teams [CERT], emergency management, etc.).

Prevention/Mitigation is the permanent changes made to minimize effect of a disaster, for example, adding a smoke detection alarm and sprinkler system, using reduced flammable materials to build a clinic treatment barn, moving hay and other forage or shavings combustibles to a separate barn away from the clinic, or providing 25 m of defensible space around the facility to prevent wildfire losses with FireWise designs. Mitigation could include motivating clients and local community⁹ to place storm shutters on glass windows, buy a generator, add a sprinkler system or use nonflammable materials when building a barn, increase culvert size in road crossings to prevent washouts, add secondary fencing to prevent loose animals from getting to the road, etc. Information is available in the Local Mitigation Planning Handbook¹⁰ from FEMA.

Preparation includes creating the individual clinic/facility evacuation plan itself. A big part of this is obtaining documentation beforehand—photos and video of all equipment and supplies, layout of the building, copies of assets and paperwork for safekeeping in a safe deposit box and electronically in a cloud format; arranging appropriate insurance.

Make sure your insurance coverage addresses the following¹¹:

- Business interruption (continuing expenses)—find out exactly when it ends, and what triggers the end.
- Extra expense (payment of overtime pay and relocation expenses).
- Professional extension (provides coverage for injury/loss/death of animal in a practice's care).
- Custody or control. Normal professional liability only provides coverage during a case of treatment).
- Loss of income.
- Large animal and equine practitioners should consider "mobile loss of income" (which provides coverage in case a piece of equipment or vehicle cannot be used).
- Personal property (replacement value).
- Automatic inflation.
- Fire damage (typically included in business packages).
- Water damage (not typically covered in business packages—make sure you have flood insurance if you are in a flood zone).
- Debris removal/cleanup.
- Civil ordinance coverage (provides coverage in case the practice is unable to function because of an act of government).
- Comprehensive building and structure replacement.
- Coverage of rented and leased equipment.
- Interruption of power, heating/air, and sewer.
- Coverage of worker's compensation.
- General and professional liability.
- Backing up computer records on the cloud with copies of identification, registration papers,



Fig. 7. Left, Trailers line up in a staging area to help with evacuation of horse properties in Sonoma county during the California wildfires, October 2017. Right, Trailers lined up to help evacuate over 450 racehorses from San Luis Rey racetrack, which was overwhelmed with a fast-moving wildfire on December 7, 2017 and lost over 25 horses to the confusion, smoke, and flames. Left, Nathan Percy Photo; right, Facebook anonymous photo.

and photographs for each personally owned animal and any treatment or boarded animals.

Response is actionable measures when the affected area is under a watch-and-warning (danger is imminent) phases when responsible facility owners or managers implement their plans as appropriate. Even the best plan will not cover everything, so practitioners must be flexible, innovative, and address problems as the situation changes (Fig. 7). During the North California 49er fires in 1988, a large-scale evacuation of a variety of livestock, horses, llamas, and other animals including pets was conducted. Local emergent volunteers were highlighted as the single greatest factor in the success of the evacuation of animals to safety, and their efforts were most effective during the voluntary evacuation period, when it was safest for both humans and animals to be conducting movement.⁷ There are response actions that veterinarians can encourage their clients to follow based on local emergency management plans and guidance.¹²

The *recovery* period is the time when local areas conduct cleanup after the emergency/disaster, which may last from a few days to months or longer. This will include immediate repairs to fencing, buildings and equipment, clearing debris, plans and preparation for rebuilding if destruction occurred, re-evaluating future needs based on facility/structural and animal losses, disaster applications, insurance claims, and official damage assessments. Any prior documentation will help prove losses to insurance companies and disaster specialists working a case.

Development of an “all-hazards” disaster plan allows response in a proactive manner to hazards that may occur. In the past, emergency management planned for separate incident types, (e.g., blizzard

snow plans separate from flooding, high-wind events, or electricity loss plans) but experience has shown that all require similar preparation. The “all-hazards” approach means that in general, one basic solid plan can be applied to many other less common scenarios, helping to focus staff and client reactions to new dangers as the situation changes (such as the hurricane winds subside to flooding and tornados). By basing your plan on selected hazards with the greatest possibility of affecting your locale, you can build the plan based on appropriate responses of staff to planned concerns—*all other planning then builds upon the basic plan*. This saves time, money, and effort.

Imagination (and perhaps money) is the only limit to human planning for disasters. Although geography and climate will increase the possibility of certain scenarios (these might include barn fires and wildfires, blizzards, flooding, power loss, earthquake and mudslides, chemical spill contamination, high-wind events of tornado, hail storms, or hurricanes), many of these can be mitigated with proper planning and prevention.

There are three methods for development of disaster plans.

Best

Planning in the absence of an immediate threat is the preferred but rarest method, because it provides everyone time to think through the plan and identify resources. Unfortunately, many people are too busy to devote the resources and time to plan, or take the attitude that it will never happen.

Good

Another common method for planning is in the immediacy right before an impending disaster. Since



Fig. 8. Firefighter attempting to evacuate a horse from a stall under simulated wildfire conditions of fake smoke and under duress of time. This type of evacuation practice demonstrates the challenges and gaps in an evacuation plan. Photo courtesy of Jack Wilson.

the public masses are using the same method, resources are scarce and difficult to find (generators, fresh water, fuel, food, and shelters).

Poor

Planning during the actual disaster is a desperately necessary but biased method that is followed by a large contingent of the public, as seen in the aftermath of media-covered disasters. The real heroes are not the people seen in media stories leading their animals through the flood, wildfire smoke, or getting on the road to evacuate; the true heroes are the unsung ones that left days before or defend their facilities with wise choices of location, shelter, and preparation to help their clients.

Unfortunately, when people wait to use the last two methods, some pay for their folly with their lives, or the lives of their animals.^c An inventory of the disaster types that are theoretically or statistically more likely to happen in their local area will give the planner a place to start for both evacuation plans, and shelter in place plans, and build success in the face of disaster (Fig. 8).

Fitting into the Emergency Management Plan for your Community

Online training materials to further apprise practitioners and clinic owners/managers of planning considerations for animals are available via online FEMA courses:

- IS-10 Animals in Disaster, Module A: Awareness and Preparedness.
- IS-11 Animals in Disaster, Module B: Community Planning.

- IS-111 Livestock in Disasters.

These courses are basic to individual facility and community awareness planning for emergencies and disasters—available at <http://training.fema.gov/IS/FEMA>—also provides the Professional Development Series of independent study courses that provide a well-rounded set of fundamentals for those involved in local emergency management or functioning as responders under the Incident Command System (ICS). ICS 100 is mandatory training for all federal, state, and local government employees, and is free at <http://training.fema.gov/IS/>.

4. Discussion

Where to Start with the Plan

The planning cycle starts with a recommendation that the facility owner and staff conduct a hazard-specific identification, a risk and vulnerability assessment, plus a capability and resource assessment for their facility. The process is not complicated and starts with thinking through the process and writing plans down, then updating it as needed. Having a written plan will help during chaotic times when thought processes may not be clear. Planning efforts allow personnel the luxury of time and resources to make informed decisions as to what they want the appropriate courses of action to be, for the respective hazard. Hazard-specific identification is the process of evaluating the possibility of hazards that have 1) a reasonable expectation of occurring, and 2) could impact your facility based on local geography, terrain, urbanization, and climate. An official assessment for your area is available by



Fig. 9. FEMA uses this diagram to communicate the concept that RISK is the relationship between hazards, and assets in the community.¹²

contacting your county/city Emergency Manager or Emergency Operations Center. In some areas, this is available online (Fig. 9).

Making a plan once and putting it into a drawer is not sufficient, it should be part of a regular planning process that dynamically changes based on new information, new personnel, review of what works and what doesn't, and lastly, perform a practice to test the plan. The plan should be reviewed and updated regularly as animal facilities or services change, urbanization occurs, or as other factors affecting the facility may change. As an example, a rural clinic in Kansas will have very different expectations for assistance from their 911 responders than one in the urban and suburban environment of Wellington, Florida during a local emergency.

The planning PROCESS is as important, perhaps more important, than the plan itself, involving all potentially affected people as a team in the plan (your family, staff/employees, clients, etc.) This ensures commitment by everyone to the effort. Appropriate practice/testing of the plan, improvements to the plan and performing mitigation activities build confidence in your staff and clients, and encourages clients and others to follow suit—taking ownership and responsibility for their own family, animals, and property. Ultimately, the goal is for resilient communities that are self-reliant and can plan and respond appropriately on their own. Continuity of business after disasters is a reliable predictor of community resilience. Community farms and other agricultural businesses such as veterinary clinics and equine facilities will contribute to a more rapid recovery and restoration to normal operations by having an effective disaster response plan. You can gain a solid understanding of emergency and disaster planning for businesses and animal situations; there are plenty of books, references, and online resources available.^{13–15}

Risk and vulnerability assessments allow evaluation of critical infrastructure for the facility—most commonly water, natural gas, forage provisioning, electrical service, and transportation accessibility to the outside world. In a reproduction facility, it

might be protection of the electrical for specialty cooling and freezing assets for genetic material. In a treatment clinic, it might be refrigerators for maintaining drugs at the correct temperature, and preventing mold and mildew in feed. Capabilities may change based on training and resources in your area, but are there specific vulnerabilities in your facility that are necessary to preserve the welfare and quality of life for animals or fulfill important disaster recovery functions?

What best practices for your business do you use every day that increase your flexibility and ability to respond in disaster situations? Good examples of DAILY MANAGEMENT ROUTINES that increase business efficiency and safety, but double as preparation for disaster and emergency response are below:

- Basic fire safety ideas for human facilities should be applied to large-animal facilities. For example, ensure clear escape routes (you won't find aisles in a human hospital littered with obstacles and "stuff"). Don't allow shipments of hay, farm equipment, nonworking doors, or bedding piles, to block these paths. Escape routes should be available to leave the facility every 50 feet according to NFPA 150 Standards on Life and Fire Safety for Animal Housing and there should be a door to every stall on the outside wall as well as the inside aisle.¹⁶
- Provision of veterinary health maintenance (vaccination, deworming, current Coggins test) is important for all animals in your care or management, and reduces stress in animals comingled with others at treatment clinics and public events, as well as in the event of emergency evacuation or sheltering. Every hurricane watch causes a rush for Coggins testing in Southeast states as owners try to get their vaccinations, health certificates, and Coggins tests updated; even though it is documented that vaccine efficacy takes weeks to build up immunity.
- Detailed biosecurity procedures for handling sick horses, healthy horses, and preventing transmission of disease in equine hospitals.
- Permanent identification of all animals is a crucial mitigation step to implement via freeze branding, tattoo, or microchipping. Temporary and visible methods can then be added prior to the disaster or during response as necessary. Numerous disasters have shown that animals with permanent ID have the best chance of being returned to their owners, and preventing theft. Disasters are one of the few times that clinic owners and clients can easily lose track of their horses (other reasons include escape and theft). Animals reunited with owners are usually from homes with responsible owners that initiate efforts to find

them, and their animals are identified. There are very few cases where horses are abandoned or stray animals, as an example, in Louisiana after hurricane Katrina, due to microchipping requirements of horses, only three horses didn't get placed back to their original *owners*.^d

- Implement a NO SMOKING and NO ALCOHOLIC BEVERAGES policy within 250 feet of the barn.
- Learn appropriate procedures to document neglect and abuse situations. Disasters may liberate animals living in horrific neglect, starvation, and abuse conditions prior to the disaster. Practitioners performing field rescues or providing care at a clinic or public animal shelter should carefully document these animals when examination points to neglectful pre-disaster conditions. Steps to take to document starvation/neglect/cruelty/abuse cases is not the focus of this paper, but should include law enforcement to allow prosecution of owners involved in illegal activities.
- Maintain animal-owner contact information as part of the medical/boarding records, and have the owner sign a waiver delineating the plans so they understand how you will handle evacuation of their animals in an emergency where they may not be able to be contacted.
- Safety meetings monthly/quarterly are an excellent way to get your staff involved in preventing injuries, problems with maintenance, and issues with handling or procedural safety. If management cares enough to take these comments seriously and makes proposed changes, it will encourage staff to care and be proactive in protecting your business and client horses.
- Learn how to teach all horses under your care to load safely into trailers. Loading/unloading is the most dangerous task a horse learns, it is also dangerous to your staff unless done correctly. Set employees up for success in horsemanship, handling, and trailer loading as part of their education at your clinic. After all, horses left behind in evacuations of all types are often because the owner was unable to catch and transport it.^e Encourage clients to teach horses to load into a trailer at any time, under all conditions (e.g., at night, alone, raining, windy, dark, and generally miserable). It may save their life.

Shelter in Place

- Identify the shelter-in-place plan for horses in your region (for example, in South Florida, this is the only option left if you wait until 3 days ahead of a hurricane threat due to severe traffic congestion on escape routes. In California, some canyons are one way out only and require serious FireWise preplanning with CALFIRE

WILDFIRE CONSIDERATIONS

- | | |
|---|--|
| <ul style="list-style-type: none"> ● SHELTER IN PLACE <ul style="list-style-type: none"> – Prior Coordination – Annual Review of Plan – Hand Tools, Fire Hoses & Water Pumps – Generators for Pumps or Solar and Batteries – 60m Buffer All Sides – Employees Trained – Access for Fire Department Vehicles – Batteries, NOAA Weather Radio – Prepared to EVACUATE if Catastrophic Conditions | <ul style="list-style-type: none"> ● EVACUATE <ul style="list-style-type: none"> – Trailers Hitched To Fueled Trucks, Extra Fuel – All Horses Taught To Load – 3 Days Of Hay, Feed Loaded Up For Each Animal – A Place To Go Coordinated Prior To Evacuation – Maps And Route Recon – Batteries, NOAA Weather Radio, Flashlight, Chargers – Portable Panels, Electric Fencing as Backup – Communication with Family, Clients |
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Fig. 10. An example of some considerations when preparing to shelter in place at the facility, or evacuate with your family and all animals. Graphic courtesy of Sarah and Al Filice.

to be able to defend your property in cases of evacuation orders (Fig. 10).

- Make evacuation escape plans in consideration of what the local Emergency Management plan and others are doing, so that your resources are available as outlined in your plan (i.e., Public sheltering for horses and pets filled fast in the Hurricane Irma evacuation from Florida all the way into Georgia, Louisiana, North Carolina, Virginia, South Carolina, Tennessee, Texas, Alabama, and Mississippi; however, private sheltering was still available if coordinated ahead of time).
- Identify safe areas for grazing (do not allow animals access to the hazardous materials found in floodwaters, volcanic ash, other chemicals, and fertilizer).
- Remove interior fencing so animals can reach higher ground if floodwaters are expected to rise or if the lower-priority animals have to be left behind in an unplanned disaster. Letting horses out of fencing to fend for themselves in wildfire or flooding is not recommended—they can be hit by cars, get trapped in various obstacles, or go for days with no water and feed.
- Leave 'em in or leave 'em out? In general, unless the disaster is electrical or chemical in nature, leave them out in the largest, best-built fenced pasture available. Horses will find cover in trees or natural shelter, and normally will stand with their hindquarters to the wind so that the muscles of the hindquarter will absorb any serious injury from flying debris, etc.—these injuries will look horrific but heal well. Horses can be electrocuted by falling power lines or lightning, crushed by flying vehicles and equipment, or lacerated by debris that now is dumped in their pasture. Alternatively, horses trapped in barns are subject to flying debris all around them and the high possibility



Fig. 11. Storm surge from Hurricane Katrina (2005) destroyed this stable and rescuers were unable to access the area for over 2 weeks after the disaster. Photo courtesy of Rebecca McConnico.

of a building fire or collapse. After Hurricane Katrina in 2005, responders noted that they did not see a single barn still standing, and those that were left were destroyed (Fig. 11).^f

Issues to address in planning include the following:

Prioritize the animals to be evacuated. Prioritize the value (actual market value or sentimental) of all animals annually and make a list of which animals to save first. This may sound harsh, but it is practical based on the hard lessons of previous disasters. A beloved 25-year-old lesson horse may be more valuable than the 4-year-old panicky show horse, and may be easier to evacuate as well. Identify which animals are easiest to load. Which seem to colic when they drink different water or hay? How many trailer spaces are available in the fleet? After packing that four-horse gooseneck trailer with four horses, is there room for dogs, cats, and human family or staff members? Would it take a second trip to retrieve other animals? In reality, disaster evacuation policy prevents return—once out with the first load, it is difficult to impossible to return for a second load.

Large numbers of animals should be evacuated very early in the case of wildfires, flooding, and hurricanes. It may require a great deal of labor, fuel, and other resources to move large numbers of animals. Maintaining a list of response partners (including neighbors, peers, colleagues, local officials) with the capability of assisting with moving

animals and people out of harm's way is critical. Consult your emergency management and watch the weather channels to determine the extent of the disaster—get well out of the expected path. Stranded owners with their animals in the middle of a flood are unreachable to the outside world and on their own until assistance can arrive.

It is important to identify a sheltering location or evacuation site to move to. Options may include a humane sheltering facility for large animals, private farm, or public evacuation stable. What is the distance to the evacuation location? Establish prior coordination and maintain communications so that when the animals arrive the alternate facility has space. An example of a functional and regularly used plan is a Florida veterinarian who includes an evacuation plan for all interested clients. A horse trailer/van is automatically scheduled for prestorm evacuation ahead of the hurricane force winds reaching the coast. Horses are moved to a large harness facility in Hawkinsville, Georgia. The owners of the horses are then freed to pack their families, and follow their animals north out of harm's way. The owners share the cost of the large van, since many of the clients do not have enough trailer space for all their horses. This plan has been enacted three times in the last 20 years.^g

Practice and Mock Drill of the Plan

See plan examples at the following links:

- <http://lsart.org/sites/site-5439/documents/AHorsemansGuide.pdf>
- <https://www.halterproject.org/make-a-plan>
- <https://vetmed-hospitals.sites.medinfo.ufl.edu/files/2015/04/Disaster-Preparedness-for-Horses-.pdf>

Evacuation Practice

The best way to prepare for evacuation is to do a mock evacuation drill—with everything you would want to take with you. Preparation can take hours (hitching trailers, fueling trucks, loading equipment and feed). Well ahead of the disaster onslaught, store several days' supply of feed, water, medications, etc. as needed for each animal being evacuated or sheltered in place. Both human and animal first aid kits should be included with projected supplies (in a go-bag).

Prepare a checklist of specific tasks (includes clinic/farm/ranch/home) for evacuation or shelter in place that includes turning off the power, unplugging appliances, moving important documents to safe keeping (i.e., electronic records) and informing neighbors of your evacuation and other disaster plans.

Sheltering facilities should be identified within an appropriate radius of home (close by in the event of a single building fire; across town if only affecting a small specific area, further away for catastrophic or possible long-lasting effects such as hurricane, wildfire, or earthquake). Evacuees should expect to pay PER DAY, PER ANIMAL fees for evacuation facilities, campgrounds, or private facilities. Public facilities fill quickly with those who failed to plan, and may not provide the amenities expected for your horses.

Practice the evacuation plan you have developed by holding unannounced drills every 6 months for an evacuation of different scenarios (e.g., fire, flood, wildfire, volcano eruption, hail, hurricane, etc.). Vary the time of day (or night) and the requirements of the drill—does everyone really have to load up every horse in a trailer and haul it somewhere? Or could staff practice catching all horses and bringing them inside the treatment barn for a simulated hail storm? Could you place a stuffed animal in each stall and have personnel practice the steps required to ID, catch, load, and evacuate with 3 days' worth of feed and medications to treat the animals—and just drive a few miles to the local stockyards for practice?

Practicing a plan is similar to childhood tornado drills in schools, with the emphasis on staying calm, thinking through the problems, and responding in a proactive manner, which will benefit human and animal resilience during emergencies. Think through to coordinate where to move evacuated animals in the event of emergency evacuations, especially as conditions change (wind direction, hurricane impact zones, precipitation estimates, etc.). Clients will expect your business to be resilient so that you can



Fig. 12. A veterinarian assists with field triage evaluation of a horse after a disaster situation—the goal of planning is to easily resume business after a disaster so that your clinic can be available to respond to individual emergencies for your clients immediately after the disaster passes. Photo courtesy of Little Fork Fire Rescue, Virginia.

respond to their calls for help for animals injured or affected by the disaster (Fig. 12).

Communicate information about safe evacuation routes before the disaster, identify more than one safe route out of the neighborhood, remembering that the officials may block at least one route under the emergency, and traffic may affect the other. Set up a phone/text messaging tree to communicate the practice's emergency plans and response information with clients (e.g., where to bring injured or affected animals for necessary treatment, availability of services after the disaster passes, etc.). In many past disasters, Internet and cell phone communications has been unavailable for hours to weeks—communication plans should include nondigital methods. Recommended communication resources include a NOAA weather radio (battery powered), two-way radio, push-to-talk/text/audio phone, Internet access (tablet, etc.), and a CB radio.

Updates to your social media, Web site, and phone messaging should make it easy for clients to find and receive up to date information. The challenges with social media should be considered in your plan—if you are not able to provide services, make it known. Emphasize partnerships in practices across town, across the state, and out of state—so that your business maintains continuity as part of your long-term emergency planning.

Risk identification, reduction, and mitigation of the effects of disaster on the practitioner's business and family starts with a well-written plan taking an all-hazards approach to sheltering in place, and/or evacuation as crucial parts of effective equine facility management. By setting the example in their communities, practitioners will gain personal experience that reaches into other areas of their lives,

and make them better able to advise their clients. The goal is to increase the resiliency of the entire agricultural community by integrating animal issues into an overall emergency management strategy for the community, state, and nation.

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Declaration of Ethics

The Authors have adhered to the Principles of Veterinary Medical Ethics of the AVMA.

Conflict of Interest

The Authors have no conflicts of interest.

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