

Assessing Risk and Identifying Resources for Search, Rescue, and Medical Emergencies

**A tool for land managers who have neither jurisdiction nor personnel to
conduct or manage an emergency operation.**

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Abstract

A presentation designed for karst managers who lack jurisdiction for conducting searches and rescue operations or managing medical emergencies or who have jurisdiction but lack personnel to conduct search and rescue operations or respond to medical emergencies.

No land manager should wait until an actual emergency incident to be introduced to his or her local search and rescue teams or local medical responders. This presentation provides an overview of the steps land managers can take to identify appropriate response resources, make sure their organization is part of the command structure for the incident, and ensure the event is run in accord with their needs.

Introduction

Land managers fall into two broad categories when it comes to planning for emergency incidents:

- Those with jurisdiction to provide emergency assistance and the personnel to provide part or all of the response; and
- Those who lack either the legal jurisdiction to conduct or manage an emergency operation, or who do not have personnel trained in emergency operations.

Jurisdiction, for the purpose of this paper, means the authority or legal power to manage some, or all, of the incident. Those land managers with jurisdiction and with personnel to handle some portion of the emergency operation, are usually governmental entities—city, county, state, or federal. These managers frequently have a duty to provide an emergency response. And, the public visiting these properties often expects a response or assistance from individuals wearing the uniform of these land management agencies.

Land managers without jurisdiction are usually from the private sector encompassing not-for-profits, trusts, foundations, and individuals. They face a different set of challenges than do managers with jurisdiction and a duty to respond.

All land managers have the potential for an emergency incident requiring outside resources and responders. Unfortunately, from the land manager's viewpoint, not all such incidents end on a positive note. The incident may create adverse publicity for the land manager, decisions may be made by responding emergency personnel that are not in accord with the land manager's policies and practices, land and water resources may be negatively impacted, and sensitive flora and fauna may be destroyed or damaged.

These negative outcomes are especially common for land managers with no jurisdiction for managing or conducting an emergency operation on their property or for those who may have some jurisdiction but have no personnel to provide that response.

To ensure a more positive outcome from the land manager's point of view, it is important to plan ahead for emergencies requiring outside responders. The day of the emergency is not the time to learn how to manage an emergency incident, meet responding personnel, and describe your organization's policies to the responders, press, and family members. Indeed, the chances are excellent that the event will be well under way, and responders already on scene, before you are aware that the emergency exists.

A good plan should:

- be designed around the basic types of emergencies
- assess the risks to individuals the land manager's property presents
- assess the risks to the property that the response to the emergency presents
- determine how to handle publicity
- identify potential responders, and
- contain ways to mitigate the effects of the response

Four Types of Emergencies

There are four basic types of emergencies that usually require outside responders:

- medical emergencies
- searches for lost individuals
- rescues of ill or injured individuals
- natural disasters such as fires and floods
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Occasionally an incident may incorporate portions of all four. In addition to these emergency events other types of situations may arise—such as plane crashes. But the planning for the four major events should provide sufficient guidelines for handling these other types of disaster situations.

Medical Emergencies

Medical emergencies can occur anywhere. There is little difference between what can happen to an individual at home, at the mall, or on managed land. Common medical emergencies include:

- heart attack
- stroke
- choking
- difficulty breathing
- rapid onset illness, such as a reaction to an insect sting or a snake bite
- illness due to a chronic condition such as diabetes

Responders to medical emergencies bring to the ill or injured subject the highest level of pre-hospital care immediately available. The EMS (emergency medical services) system of pre-hospital care encompasses "First Responders," and Emergency Medical Technicians (EMTs). For most communities, this usually means an ambulance service that provides, at a minimum, basic life support. But care can and does vary from one state to another, and even within counties in a state.

The least that the landowner should expect from an organized rescue service (county, city, or private) is that personnel have received "First Responder" training. This means that the individuals are trained to provide initial care for patients suffering injury or sudden illness and trained to help EMTs at the emergency scene. Some services provide advanced life support and others have advanced life support personnel who are also trained in wilderness response protocols. Frequently, these emergency medical responders are backed up by a helicopter transport program staffed by paramedics and nurses and operated out of a hospital with a large trauma or critical care facility.

"First Responder" training is fairly standardized. Classes are based on guidelines originally developed as a 40-hour course by the U.S. Department of Transportation. Unfortunately for the land manager, when it comes to other EMS training, each state has its own definitions of what constitutes basic and advanced life support. It is not unusual for some of the skills considered advanced in one state to be considered part of the basic life support skills in another.

Individuals injured on your property will receive the same standard of emergency medical care that the community surrounding your property receives. The chief difference in an EMS response to an individual on land management property and one at the mall, or at home, is one of access to the individual.

Searches for Lost Persons

Searches usually involve a person, or persons, reported overdue or presumed lost. On some occasions they may involve an object, such as a weapon used in a crime.

The lost or overdue person(s) may range in age from very young children (sometimes just barely able to walk) to adults. The individual

may have a chronic medical condition, be physically or mentally handicapped, be mentally ill, or have a debilitating disease such as Alzheimer's. A search should always be treated as an emergency.

A land manager may become involved in a search directly or indirectly. The person may have become lost while on the manager's property and is reported lost by the land manager. Or, the overdue or lost individual is presumed to have wandered onto the management area from adjacent property. Either way, the effect on the land and its managers is the same.

Jurisdiction for search is not uniform in the United States. In western states, search is frequently the responsibility of law enforcement agencies, such as the sheriff or the state police. In eastern states the jurisdictional lines may cross, and several agencies may have, or may believe they have, the responsibility for search. And responsibility for search may also vary from county to county within a state—a problem for land managers whose properties encompass more than one county. Often in the east, when a dispatch center, such as a 911 facility, receives a call about an overdue or missing person the center will dispatch a law enforcement officer. If the law enforcement officer determines that there is no foul play, the officer may request the services of the fire department to actually conduct the search. Law enforcement may then leave the scene, and all responsibility for search then falls to the fire department.

Most land managers consider search to be an above-ground activity. But those with caves, or non-operative mines, must consider and plan for searches below ground. Searches can also take place in water and present additional difficulties. Most searches that occur in water are for the bodies of individuals presumed drowned.

Rescues of Ill or Injured Individuals

Be aware that the term rescue can be interpreted in two ways. In many areas, when a group is identified as a rescue squad, their main functions are automobile crash extrications and back-up medical assistance for an ambulance-based service. Their training and equipment is focused solely on medical support and the use of vehicle extrication tools.

The other meaning of rescue involves assistance to the ill or injured in remote, or difficult to access, wild land areas. The rescue operation brings the highest level of medical care, immediately available, directly to an injured or ill individual and evacuates that individual from

the point where they were injured or taken ill. Because this type of rescue frequently involves a location where normal EMS access is difficult, this means that frequently the ambulance crew is not going to provide initial care to the injured or ill person. Instead, the rescuers will provide this initial care and transport the person to the waiting ambulance-based personnel.

Like search, rescues can take place above or below ground. Like search, rescue above ground can involve the use of motorized vehicles and aircraft. Radios can be used to keep track of the rescuers and receive updates on the injured or ill person(s). Expect rescues underground to take longer. Specialized communications must be set up and evacuation becomes an exercise in logistics and manpower.

It is not always clear who has jurisdiction for rescue. Again, in the western states, this usually lies with law enforcement. In the eastern states the situation is even more confusing than it is for search.

Some states only allow rescue services to be performed by a governmental agency such as a fire department, or through a state-certified rescue program. Other states allow any group wishing to provide rescue services to incorporate, raise money, and hold themselves out as a rescue organization within their county. In some states this has resulted in several rescue organizations competing for victims (and funding) with other county rescue groups. There are no current standards for what constitutes appropriate rescue training for the wilderness environment.

Always be aware that a medical emergency, or a lost individual, may include a rescue component.

Natural Disasters Such as Fires and Floods

Fires and floods present their own set of problems. Some wild land managers may prefer for the area to burn, rather than allow the fire to be suppressed. When heavy trucks and brush crews enter an area they can often do more damage to the environment than the fire presents. In addition, some types of vegetation require fire to re-propagate. Response to fires varies from area to area. Many states have agencies devoted to forestry. One of their responsibilities is the suppression and management of various types of wild land fires. But it is not unusual for county or city fire departments to also engage in this activity.

Floods present a hazard to individuals that may be hiking, camping, or using the property for day trips or events. Flooding can also be a

factor in cave rescue. Responders for flood events will vary from county to county. Special

training is needed for responding to victims trapped in rapidly moving water.

Planning for Ensuring a More Positive Outcome

It is impossible to control a large event once it has begun. Begin, instead, by assuming that one or more of these emergencies will occur and create a written plan to address your concerns. Creating a plan requires initiative on the part of the land manager. To be good, a plan does not have to be complex. But it does need to be comprehensive. The plan should:

- Assess the risks to individuals the land manager's property presents
- Assess the risks to the property that the response to the emergency presents
- Determine how to handle publicity
- Identify potential responders, and
- Contain ways to mitigate the effects of the response

Assess the Risks to Individuals That Your Property Presents

All properties present some risk to visitors. The risk might simply be in terms of lack of easy access for medical personnel when dealing with a medical emergency such as a heart attack. Or the risk might be more direct, such as falling from a height, or drowning. Note the places on the property where such risk exists. The point is not necessarily to minimize the risk, but to know it exists. Once a risk is identified, the land manager will be able to give adequate directions to the responders involving that location, be aware of the types of response necessary for an event at that location, and be prepared to provide input before and during the management of the emergency.

When assessing risk it is important to discuss these factors with the land manager's attorney. For some organizations, acknowledging that the property presents any risk at all will outweigh all other factors such as environmental degradation or unfavorable publicity.

It will be necessary to physically visit the property and its features to do an accurate assessment of the risks that it presents. Record locations or directions to these risk features as well as basic information about the feature (height, depth, and so on). Consider access to these locations, and the types of skills responders would need to have to handle an emergency at the location. Begin by noting the obvious:

- **Falls from heights.** Are there heights, such as cliff faces, water falls, or boulders, that present an opportunity for a view, or are a

site for such sports as rappelling or rock climbing?

- **Confusing points on trails.** If there are trails on the property are there any points where an individual can be easily misled? Is signage misleading, confusing, or difficult to read?
- **Poisonous plants or insects.** Are there common or unusual poisonous plants or insects on the property? Do any require unique anti-toxins not normally available to EMS personnel or from the local hospital?
- **Water hazards.** Are there bodies of still or moving water that can become points of danger for the unwary? What is the water depth, or the rate of water movement? Is this seasonal?
- **Other.** Are there features to the property, such as old mines, tunnels, wells, buildings, or slide areas that are unique and present some danger? What are they? Are they year round or seasonal?

Assess the Risks to Your Property That These Emergencies Present

All emergency incidents affect the organization and its property. The amount of impact is dependent upon the size of the event, the urgency of the mission, and the duration of the event. Those things with the most impact include:

- **People.** A small emergency, such as a response for a heart attack, will bring at least two medical people to the scene. A larger incident, such as a search or a rescue, may bring dozens, or even hundreds, of people to the scene. When people are present for any length of time they bring all of their physical needs with them. They need to be fed, watered, and toileted. People generate waste as well. When they are located in one area in large numbers their mere physical presence will impact the land. When they walk, or are transported, that too can change the environment.
- **Equipment.** People will bring equipment with them. In a minor medical emergency this will be the medical kit and the ambulance stretcher. In a rescue, this may mean a large amount of material that must be located at one or more sites convenient to the rescue operations. Equipment must some-

times be transported to a rescue site. This could involve additional environmental impact.

- **Vehicles.** People and equipment are transported to the scene in vehicles. In the case of a volunteer organization (even if it is run as part of a governmental unit) this may mean a large number of personal vehicles. Often, response protocols dictate that a fire truck be sent to certain types of medical emergencies. Fire trucks are very large, heavy, and require significant amounts of space in which to be turned. Other rescue vehicles that are used for transport of personnel may also be large and heavy and will impact the land. All vehicles will probably remain on scene until the emergency is resolved. This means that they will be parked in a location that may or may not be of the land manager's choosing.
- **Command.** This refers to the individual(s) managing the incident. Most incidents can be resolved with a very small number of individuals in these command roles—one or two at most. But a large search or rescue may involve many more individuals. Sometimes, where jurisdiction is not clear, there may be several entities who take the command role—possibly operating at cross purposes.
- **Operations.** This term refers to the tactical side of the emergency incident. It includes conducting the search, performing all of the tasks necessary for a rescue, and handling the medical needs of the patients and/or the responders. This can be one of the most damaging portions of the event as far as land use and the impact on flora and fauna is concerned. To haul someone up a cliff involves a good deal of repetitive movement in a small space. This can produce unwanted environmental damage. Large groups of untrained searchers moving through the

woods can also be damaging. Occasionally fences must be cut to provide access for personnel or equipment. Gates are sometimes forcibly opened.

- **Publicity.** The longer an event runs, the more chance there will be that it will become the focus of the written and visual media. In addition, each responding agency may have protocols that involve publicity that are not in accord with that of the land manager.

Determine How to Handle Publicity

Plan ahead and determine who in the case of a medical emergency, a search, or a rescue, will speak for the land management organization. Make sure that everyone in the organization is aware of this decision and is willing to abide by it. Choose a second individual to serve as a back up, or to act as relief during an incident of long duration.

Have written information available beforehand that describes the land management organization and its purpose.

Decide in advance what information about the property is to be disseminated (such as locations, or information about relics, flora, or fauna). Spend some time determining how the organization wants to handle situations that include life-threatening injuries to a visitor or possibly even death.

If the organization wants the media present, then there should be some criteria for triggering that decision. Before the event, identify specific individuals within the print and visual media and establish a working relationship with them. Those are the individuals to call during an emergency incident. Coordinate press activities with those of the other responders. Frequently their press needs may be at odds with those of the land managers

Identify Potential Responders

911 Centers

Begin by determining who dispatches the responders. Emergency 911 dispatching is usually county based, but not all 911 programs are created equal. In some communities 911 is a centralized service where all dispatchers for all emergency services (fire, sheriff, police, medical, emergency management) are all located within the same facility, and have simultaneous access to the same computer screens and data. It is also possible to have a 911 Call Center, but to have several major emergency providers, such as the sheriff, choose to operate their own dispatch service.

In other communities 911 reaches a single dispatcher, or emergency service provider (frequently the sheriff's office) or agency, who then routes the caller to the responder the dispatcher believes is appropriate. Other dispatchers are not co-located and may not have access to the same sets of data. If the caller is routed incorrectly there may or may not be a quick way to return the caller to the original dispatcher for re-routing.

Emergency 911 centers serve as a dispatch center. They usually work with written protocols. The 911 center does not create these protocols (how many trucks to send; which fire station goes to which address), the responding agencies do.

After determining how the local 911 center works, give them a name and telephone number so they can reach a representative of the land management agency. Then ask them for a list of all agencies they dispatch, and the types of calls for which each responder is responsible. If 911 does not dispatch all emergency responders, find out who is not included and add them to the list. Then meet with each responding organization.

Meet with Each Responding Organization

Meet with each potential responding organization. Remember, there may be more than one organization that believes they have jurisdiction over your emergency. Meet with everyone that feels they have some authority to exercise over your situation. This includes the ambulance service, the fire department, all organizations responsible for search or rescue, law enforcement (sheriff and police), game rangers and natural resources law enforcement personnel, and the coroner.

Begin each meeting by explaining how each responder can reach a representative of the organization. This has to be easy for the responder. No responder, or dispatch center, has the time to place a dozen telephone calls in order to reach the land manager.

At each meeting discuss the risks that your property contains. Explain any environmental concerns, laws, or requirements on your property that will directly affect the responders. Explain your desires regarding participation in command decisions or operations. And ask questions:

- Do they have personnel with the ability to access your risk areas?
- What type of training do the responders have specific to the risks that you have identified on your property?
- What equipment specific to your risks will they bring to the incident?
- How many people and vehicles do they anticipate sending?
- Have they ever conducted an operation of this type before?

- Who do they use as a back up should the event be of long duration, or require additional skilled responders?
- Do they use the Incident Command System as their on-scene management structure?
- What are their protocols for radio traffic?
- Who in that organization is authorized to speak to the press?
- Is the press routinely notified of certain types of events?
- How will they work with you to meet your needs?

Based on their answers the land manager may want to enter into a discussion (at this meeting, or at another) about areas of concern. Some elements may be negotiable, others may not.

Ways to Mitigate the Effects of the Response

Adequate pre-planning can mitigate many of the effects of a large operation. However, there is always a balance that must be maintained between the protection of sensitive areas and the potential loss of the life of the rescue subject or of the rescuers themselves. The most effective way to achieve this balance is by learning what is required for the most common tasks involved in a medical, search, or rescue-related emergency.

A good plan will address those aspects of the emergency that create the highest impact on selected land features. Plan ahead for vehicle parking and the staging of personnel. Pre-plan low impact routes for emergency responders to use to reach high-risk areas. If the event is of long duration, make sure plans exist for handling a large number of people within a small area.

If over-lapping jurisdictions are identified as a problem, insist that the Incident Command System be followed, and take advantage of its Unified Command function. This allows all those with jurisdiction, or with a major stake in the event, to have an incident commander present at the scene, responsible for developing the operational plan and responsible for choosing the operations chief. It also requires all command positions to be co-located. Preplanning for this will help both the land manager and the responding organizations.

Conclusion

This paper has presented an overview of a planning process for land managers to address emergency incidents. Unfortunately, as with any overview, it is impossible to cover all situations and contingencies and to provide the

detail necessary for the development of such a plan. Creating a good plan takes a significant amount of time and energy—and sometimes money. This paper can only serve as a starting point in the development of such a plan.