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# 3



## Disaster Preparedness

Surviving Disasters On Your Own Terms

The Lightning Press  
Ferlemann



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(FEMA photo/ George Armstrong)

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# Civil-Military Smartbook 3: Disaster Preparedness Surviving Disasters On Your Own Terms

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ISBN: 978-1-935886-48-8

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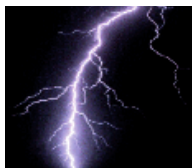
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# Note to Reader

## BE AWARE, PREPARED & RESILIENT

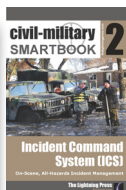
Disasters can happen at any time but with some careful thought and little preparation you can make choices before a disaster strikes that can directly improve your situation.

- Learn to understand the different kinds of disasters and their effects.
- Learn how to make your own plans and preparations that are right for you and your family.
- Build personal resiliency and give yourself options even when facing the worst situations.
- Know what kinds of help you can expect from government responses before, during and after the disaster.
- Discover what the government should provide after a disaster, how government plans to provide for people's needs and where the government will focus its efforts in response to a major disaster.

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Disaster management (or emergency management) is the term used to designate the efforts of communities or businesses to plan for and coordinate all the personnel and materials required to either mitigate the effects of, or recover from, natural or man-made disasters, or acts of terrorism. Defense support of civil authorities (DSCA) is support provided by federal military forces, Dept of Defense assets, and National Guard forces in response to requests for assistance from civil authorities for domestic emergencies, law enforcement support, and other domestic activities, or from qualifying entities for special events.

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# Introduction: Disaster Preparedness

## A Real Worst-Case Scenario

In June of 2002, FEMA director Joe Allbaugh states that the potential effects of a hurricane on a major city cause him "great concern." New Orleans is one of the cities on his list. On Friday, August 26, 2005, his worst fears are realized: Hurricane Katrina is building power in the Gulf of Mexico and headed right for the coast of Louisiana and Mississippi. Late in the afternoon of August 27, orders to evacuate New Orleans are confused with separate authorities' calling for voluntary and mandatory evacuations. It was generally agreed that people should leave the low-lying areas. Many citizens take advantage of the short window for departure and heed the evacuation order. Many others do not or cannot. Traffic is slow on clogged highways for the next 24 hours. Many highways become one-way to accommodate the exodus. Early on the 28th, Katrina becomes a Category 5 Hurricane; evacuation orders become mandatory. But for many still in the city, it is too late to leave. The city opens 10 "shelters of last resort," including the Superdome. Other strong points in the city become unofficial shelters. Some 100,000 people are still in the city. The National Weather Service predicts the levees may be "overtopped" by the storm surge.

Katrina makes landfall at 6:10AM on Aug 29. Over the next 24 hours, many of the city's levees fail, flooding 80% of New Orleans in up to 20 feet of water; hundreds perish. As the worst of the storm passes, the city is left in pandemonium. The rule of law disintegrates as looting and violence sweep through the streets. 25,000 people are trapped in the Superdome, and 52,000 more arrive at Red Cross shelters and relief stations. Over the next several days, police are called away from search and rescue efforts to deal with the continuing lawlessness. Other rescue efforts are suspended due to sporadic gunfire endangering rescue helicopters and boats. Explosions and fires are seen across the city. By September 1, there are 45,000 refugees in the city shelters. Despite rescue efforts, hundreds more die in the aftermath, lacking security, sanitation, food and water, medical attention, and evacuation. The federal government responds with thousands of armed National Guardsmen followed by active-duty personnel to provide security and support the national rescue effort. The New Orleans city government is unable to restore services or support the few services that remain. Feeling frustrated, helpless, and abandoned, hundreds of New Orleans police officers walk off the job. The failure is epic: some officers commit suicide. By September 3, some 40,000 National Guard troops have deployed to the Gulf Coast states to assist in the relief and restore order. On September 4, the Superdome is officially evacuated, and soon only stragglers remain. By September 6, the streets are mostly secure. The city begins the long road to recovery. Reports vary, but around 1,500 to 2,000 city residents are dead or missing. It is the highest death toll in any U.S. city in over one hundred years (Brookings inst.).

Why was New Orleans affected so severely? Hurricane Katrina had a significant impact not just on the City of New Orleans, but also on the entire bottom third of the state of Louisiana, half of the state of Mississippi, significant portions of Alabama, and parts of the Florida panhandle. Cities like Gulfport, Mississippi, were devastated, but did not suffer the same aftermath as New Orleans. What made this one city the worst-case scenario?

This event was not a surprise. The government had advanced warning and had taken action to prepare response efforts and preposition supplies. 10,000 National Guard troops were standing by along the Gulf Coast ready to respond. Despite the best



intentions and efforts, as a nation, we were unable to respond to the magnitude of this event. It will happen again.

### The question is, “Do you want to be part of the next Katrina?”

By picking up this book, you have shown an interest in your survival. It may seem to be a simplistic idea, but in reality disaster survival is determined well before the disaster strikes. You have engaged your most important survival tool, your brain. The ideas offered here are not focused on survivor skills, although some of that kind of information is included in the discussions. It is more about what happens before the disaster and how you can make choices now that will affect you later. It is also about choices you will want to think about now so you will be able to make informed decisions during and after a disaster.

Sometimes things go badly and all our hopes and plans fail us. Our illusions are shattered, our expectations are beyond anyone’s capacity to fulfill, and our demands go unanswered. When this time comes, what will you do?

*“Want of foresight, unwillingness to act when action would be simple and effective, lack of clear thinking, confusions of counsel, until the emergency comes, until self-preservation strikes its jarring gong — these are the features that constitute the endless repetition of history.”*

— Winston Churchill

What Mr. Churchill was talking about is procrastination, the unwillingness of people to think about unpleasant things in the future and prepare for them. These words are a warning from a man who led his people out of the fear and pain of World War II. More importantly, he was a man who made people do the things they needed to do to survive and learned important lessons from the experience. First was the idea that a little preparation goes a long way and there comes a point when you cannot make up for lost time. Second was the idea that, although the people he saved were very appreciative that he had saved them, they disliked him at times for what he made them do in order to survive. These two themes are directly applicable to you, the reader, in the event of a disaster. You will need to make some choices for yourself based on these two important themes.

This is not a pleasant, comfortable, or easy discussion to have. It is about scary, uncomfortable, difficult, frustrating, and dangerous situations and how you can survive them, both physically and emotionally. It will ask you to think about and decide upon issues now, when you have the time to think and prepare, rather than waiting until your options are few (or none). This is not about science or statistics, although those things will be used to support some points. The intent is that the ideas presented should act as a catalyst for a conversation you should have with yourself and your family. The information provided is both general and accurate, which is all it needs to be to help you make your choices.

## Personal Resiliency

Anytime you are reading about survival, you are reading about resiliency. Resiliency is the ability to recover quickly from setbacks. Preparation for emotional or physical challenges is part of the process, but there is no magic formula for resiliency that will make a disaster less destructive, disruptive, or devastating. True resiliency is more than just having a plan: it is a mindset, a decision made before the crisis that you have chosen to survive.

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## Introduction (Cont.)

In a true disaster you will experience loss, be stressed, and be physically and mentally challenged. Different people respond in different ways, and because survival is about choices, you can decide now how you will build your own personal resilience. It is said that courage is not the absence of fear, but what you do with it. The question for you to answer is how do you choose to develop your confidence, courage, and resiliency? How do you choose to survive?

When we make our choices, we can start by giving ourselves options for survival through preparation and learning, we build confidence and awareness by understanding what is happening around us, and we can decide now to actively participate in our own survival. These are the most basic of actions and the easiest to do. Prepare in those ways that are simple and effective while you have the time and resources to do them. Take the time to learn about the potential hazards and threats in your area and plan accordingly. Make decisions on those things that you can decide upon now, and know what decisions you may need to make later.

Still, none of this matters until we make the greatest choice of all: when we decide that we will survive and that we will do it without desperation, fear, or cruelty, but as decent human beings. By being truthful with yourself and endeavoring to meet your real needs during a disaster, you can gain a level of independence that will allow you to recover more effectively from setbacks when they happen (and they will happen).

Attitude: It could be argued that when people are trapped in a disaster they are helpless victims, completely unable to respond to the situation or to save themselves. I submit to you that *this is not the case* and that the public can educate themselves and prepare for disasters in a variety of ways. In short, you have choices, and more important, *if you choose not to make them for yourself, someone else will make them for you.*

## Beginning the Discussion

This book is designed to provide for the reader who may not have studied this before.

In Section I, *Understanding Disasters and the Role of Government*, we will cover the effects and scope of different types of disasters. Once we can describe a disaster in terms of effects, then we can look at how local, state, and federal agencies react to the different types of disasters. We will do this in two ways: first by looking at the language used by emergency managers and government officials, and second by reviewing how local, state, and federal governments respond to disasters.

We will discuss the rules governing jurisdictions and Declarations of Emergency because control and money are vital to government and become big factors in disaster response. We will also look at the specifics of how agencies work within the established National Response Framework because understanding how emergency management works is important in determining what kinds of services you can expect to see during a disaster response. This is true at the national level also, and we will examine the government's plans currently in place to preserve the nation and to provide for the population in times of catastrophic national disaster.

Section II, *Mental Resiliency and Making Your Choices*, outlines options you have for developing a level of preparation that fits your lifestyle, resources, and level of comfort. This involves an in-depth discussion on how to make plans that will actually work for you and ways to determine appropriate preparation, determine realistic expectations, and deal with unknown factors, both those things we can control and those we can't. A big part of this will include insights and discussion on different types of frustrations you may encounter and positive ways of preparing to keep a cool head.

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It may seem like the long way around to get to the question of, "What do I want to do to protect myself and my family?" but there is method in the madness. To make the kinds of informed decisions you will want to make, it is important to have a framework of how government responds to disasters. Once you have a good understanding of what kinds of threats you may encounter and how the government will respond to assist you, you will be ready to make your own plans.

Section III, Descriptions of Disasters and Things You Need to Know About Disasters, provides you with information you will want and need when making your plans and preparations.

*Be prepared and stay aware.  
Know what to do and when to do it.  
Smart is resilient,  
Resilient survives!*

## Choices and Challenges

As you progress through this discussion, you will have the opportunity to consider three questions.

**Question 1:** *What threats are you willing to live with?*

**Question 2:** *To what level are you willing to be dependent on others for assistance after a disaster?*

**Question 3:** *What level of preparation and planning will you need to make to be as ready as you believe you should be?*

When you make and act upon these three choices, you will have significantly increased your probability of survival in the event of a disaster.

## Information Sites

There is a treasure trove of survival and preparedness information that will be useful to the reader available on government websites provided just for that purpose. The information comes from the expertise of the highly educated, experienced, and capable subject-matter experts who have dedicated themselves to effective disaster communication. In most cases information is taken directly from government websites. The government does not copyright this data and asks only that persons referring to the information give due credit for where the information was acquired. This author has taken full advantage of their kindness. The purpose is not to regurgitate the information found on the World Wide Web, but rather to consolidate it and put it into perspective. You can find all of this information on the government websites listed at the end of this introduction and at the beginning of each disaster description. You are highly encouraged to do so.

If you have access to the Internet, the website locations provided with each disaster description can provide excellent information and important updates. If you do not have access to the Internet, this book provides an accurate, concise, and relevant summation of pertinent information. The intent is to provide the reader with a quick reference, to get you started if you have time to research the disaster in question or to provide the bare essentials of the available required information when you do not.

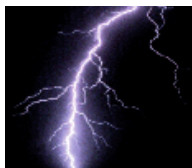
National Oceanic and Atmospheric Administration (NOAA) — <http://www.noaa.gov/>

National Weather Service (NWS) — <http://www.weather.gov/>

Federal emergency management Administration (FEMA) — <http://www.ready.gov/>

Center for Disease Control and Prevention (CDC) — <http://www.cdc.gov/>





# Acknowledgements & Recognitions

**re•sil•ience (noun)**

1. the power or ability to return to the original form, position, etc., after being bent, compressed, or stretched; elasticity.
2. the ability to recover readily from illness, depression, adversity, or the like; buoyancy.

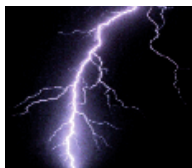
This was a collaborative effort and special thanks go to those who labored in its completion. As always, to my wife Pamela who has been my proof reader, graphics designer, conscience and best supporter for all these years; to my mother Mimi Hall with her years of experience as an editor and, in this case, her service as a disaster novice content reader. To the team of subject matter experts who worked diligently on this endeavor; Mr. Jim Green for emergency management, Captain Tim Cochran for police and fire response, and to Lieutenant Larry Collins for weapons considerations. Mr. Adam Bois was the manuscript proof reader and is responsible for the consistency of style which makes the book so much easier to read.

This effort would not have been possible without the diligent and dedicated people who work in and with the government agencies responsible for our health and safety; the Federal Emergency Management Administration (FEMA), the National Oceanographic and Atmosphere Administration (NOAA) and National Weather Service (NWS), the Centers for Disease Control (CDC), the National Geological Survey (NGS), the Red Cross and all the other governmental and non-governmental organizations who make it their business to keep the public informed of potential threats and ways to survive them.

We must recognize those brave souls, who, when all seems lost, will come to our aid; firefighters, police and emergency medical technicians of our cities, counties, tribes and states, the doctors, nurses and care providers, the Soldiers and Airmen of the National Guard and active duty, the linemen, plumbers and builders who enter the tangled wreckage of our communities to contain the wrath of broken infrastructure, the ever present American Volunteer and our neighbors who will pitch in to help even when they themselves have lost everything.

We should all remember those who plan and prepare for our safety. Even though we rarely ever see them or even know they exist, there are legions of planners and emergency managers whose sole purpose is to prepare for the worst and plan how to save lives, mitigate threats and hazards, and protect what infrastructure we have left so we can do what we always do when our world is torn down; begin to rebuild.

Finally to you, who has made the choice to participate in your own preservation.



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# Section I:

## Understanding Disasters and the Role of the Government



Section  
I

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**Sample**

# Understanding Disasters

Most disasters are the results of things we live with every day as acceptable risks: the West Coast has earthquakes, the Central Plains has tornadoes, and the East Coast has hurricanes. The very nature of the changing earth conflicts with man's desire to build permanent things. We know it is not only possible, but *probable* that a disaster will affect us because we have come to understand those natural changes. We also realize that disasters are low-probability and high-effect, and so we have come to accept the hazards and threats of these events and have adapted responses to help.



(FEMA photo/ Anita Westervelt)

It is the predictable nature of disasters that allows us to prepare for them in meaningful ways. With this knowledge we can make choices prior to an event and make decisions on some very important things. We can choose where we will live and how we will respond to the disaster probabilities we have chosen to live with. To help you understand what happens in a disaster, the first part of this chapter will discuss what disasters are and the real effects they may have on you. The second part of the chapter will discuss the importance and meaning of the words used in disaster communication.

## What are Disasters and How Do They Affect Us?

In the business of emergency management, there are many things that can be communicated to the public prior to a disaster. Although authorities sometimes do not know exactly when a disaster will take place or exactly *how* bad the damage may be, there is other information that can help identify the possibility, probability, and extent of a natural or man-made event. Names like "Tornado Alley," "hurricane season," and "100-year flood plain" represent a level of understanding that can be conveyed to the public to their advantage.

The word "disaster" is defined in the Merriam-Webster dictionary as a sudden calamitous event bringing great damage, loss, or destruction, or more broadly, a sudden or great misfortune or destruction<sup>1</sup>. The application of the word is not limited in scope



and is commonly used to describe both the catastrophic deaths of thousands in natural events, like an earthquake-triggered tsunami, or mundane man-made events, like an unsuccessful dinner party. This causes a difficulty: because it is used in so many ways, the word “disaster” does not convey the real impact of an event when we try to use it to describe something that is incredibly dangerous and disruptive.

So what do we do with this situation of loose definition? The answer is to think about what makes an event into a disaster and then think about how those events will affect us and our loved ones. When you think about it, there is a lot of information about disasters that can be discovered prior to the event that is helpful in making choices, plans, and preparations *before* the event. What information about the storm is useful to people before the storm happens?

## The “BIG 8”: Disaster Qualifiers

When people talk about disasters, they talk about causes and effects. The terms we use to describe a disaster and the methods we use to measure its effects become the definition of the disaster. For example, F5 tornado, Category 3 hurricane, and 8.0 earthquake. But these are generalized descriptions that do not give us enough information to protect ourselves.

There are eight questions to consider when thinking about any disaster: where can it happen, what will happen when, how big will it be, how long will it last, how much reaction time will I have, what will be left, who can help me, and what comes next? Although you may not be able to answer all eight questions for any given situation, it is very rare that you will not be able to answer, or make a good guess on, five or more of them. By gathering information on as many of these questions as you can answer, you make an informed plan and decision on just about any situation, man-made or natural.

*See facing page for further discussion and an overview.*

### #1. Areas of Known Occurrence, Possibility (Where can it happen?)

Areas of Known Occurrence are determined by historical records and known science, which identify the possibility of a disaster based on situation, location, season, or a combination of the three. There is little mystery here, and this information allows us to make choices well in advance of an event. Locations near volcanoes and on fault lines are directly susceptible to the effects of eruptions and earthquakes. Coastlines are susceptible to tsunamis and seasonally susceptible to storm surges and hurricanes. Inland areas can be susceptible to seasonal dangers of tornadoes and fires. If you live in the central U.S., each spring you will need to be aware of tornadoes. The area from Texas through Oklahoma, Kansas, Nebraska, and into Iowa is called Tornado Alley for a good reason. Tornadoes are also possible in all other parts of the U.S., but are not as frequent. If you live in California along the San Andreas Fault, you know you will eventually be affected by earthquakes because you live in an Earthquake Zone. If you live in the mountains or the high plains, you know that there is a high probability of seasonal blizzards and ice storms. You can use this knowledge to determine the possibility of your being affected by a particular type of disaster.

### #2. Scales and Measurements, Predictability (What will happen when?)

Disasters are measured in different ways, not just in the difference of the aspects of the event as in a flood being different than a fire, but also in *what* is actually measured and *when* it is measured. For this reason some disaster measurements are useful prior to the event and others are not. Measurements taken for slow-devel-

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We can take these eight questions and express them in quantifiable, or measurable, terms: Areas of Known Occurrence, Events and Measurements, Area of Effect, Duration of Effect, Quick or Slow Onset, Destruction of Infrastructure, Disruptions of Services, and Aftermath. Although history will record each of these aspects in full after a disaster, by looking at each question, we can discern the potential for some of the answers before the event.

1. Where can it happen — Areas of Known Occurrence
2. What will happen when — Scales and Measurements
3. How big will it be — Area of Effect
4. How long will it last — Duration of Effect
5. How much reaction time will I have — Quick or Slow Onset
6. What will be left — Destruction of Infrastructure
7. Who can help me — Disruptions of Services
8. What comes next — Aftermath

The point here is to build your ability to look at a situation and analyze the information you have, to think about what is happening and be able to make an informed decision based on your specific situation and the general knowledge of how the events usually progress.

oping events or events where the threat is determined by the measurement of pre-event conditions, as in the case of wildfire and volcano warnings, can provide useful information prior to the event in respect to the magnitude of a potential disaster. In the case of events where it takes time for the event itself to build up the energy required to become a disaster, such as hurricanes, warnings are based on measurements and movements of the existing storm, once again very useful information prior to the event. At the other end of the spectrum are tornadoes and earthquakes, which are measured after the event and based on the amount of damage done or energy released.

This has a lot to do with the predictability and onset time of an event. The longer it takes for an event to develop into a disaster situation, the more time there is to assess the situation and predict the event's effects. Keep this in mind as it is a major clue to the amount of time you will have to respond to the event.

These criteria work just as well for man-made disasters as for natural ones, although in the case of man-made disasters, they tend to be quick-onset and long-duration based on two factors: first is our occasional overconfidence in the control we have over nature and technology, and second is man's tendency to default to the kinetic tools of political diplomacy, i.e. conduct war and commit terrorism. Any war, just or villainous, causes disaster conditions. Information on the methods of measurement for specific disaster types can be found with the disaster summaries.

### #3. Area of Effect (How big will it be?)

Area of effect has two major considerations: first is how far people have to travel to escape the area of effect, and second, how much relief, in the form of rescuers, equipment, and material resources, must move into the area of effect in order to effectively help the population after a disaster.

This aspect can be highly variable or very specific based on the type of event. It is best used in conjunction with other criteria such as destruction, disruption, and duration. As an example, when considering if emergency services will be available after a disaster, there will be differences between different events. Consider these three scenarios: a 30-second earthquake that is felt in several states, but does relatively little damage; a tornado that is a quarter-mile wide, is on the ground for 30 minutes, and travels along a 15-mile path in a highly populated urban area before rising back into the clouds; and a hurricane core that is 30 miles wide, lasts for three days, and travels slowly inland for 100 miles, dropping four days of rain, causing massive flooding well beyond the coastal storm surge. The short-term effects of the tornado may cause the greatest number of deaths, the hurricane the greatest amount of property damage and disruption of services, and the earthquake the greatest area of effect. From this we learn that area of effect is not directly tied to intensity or level of devastation, but can relate to how far people or services will have to travel to get into or out of the area of effect.

### #4. Duration of Effect (How long will it last?)

Duration of effect refers to not only how long the causal event lasts, but also how long the effects last. This is not as simple as it may seem: a hurricane that brings a week of rain may only have a core landfall of 12 hours before dissipating into a storm front that lasts for another three days. This would have three distinct phases of effect: first being the wind and storm surge damage from the hurricane core, lasting several hours; second would be potential flooding from the rains, which may take weeks to recede; and third is how long it would take for all the infrastructure damaged in the storm to be fixed or replaced so that people could get back to normal living. An important point here is that duration of effects can be sequential, with multiple events causing effects over an extended duration.

## #5. Quick or Slow Onset (How much reaction time will I have?)

This aspect is not prediction. Onset is the amount of time you have with the direct knowledge of an upcoming event. This can be a week's warning from watching a simmering volcano or a tropical storm developing into a hurricane, or it can also be an instantaneous earthquake. Warning time has improved with scientific equipment, such as seismographs to record earth movement and Doppler radar to look into storms to see hook echo indications of cloud rotation and tornadoes. This in combination with more-advanced warning communication systems, such as tornado and tsunami sirens, distribution of weather alert radios, and mass communication applications for personal devices, has improved our ability to communicate threats with as much advanced warning as possible. That said, some events lend themselves to identification better than others. Two examples of extremes are hurricanes, which are seasonal and take many days to develop, on one end of the spectrum, and on the other, destructive earthquakes and tsunamis, which can be separated by hundreds of years but can happen at any time with very little, if any, warning. It is important to remember that duration of effects (how long it lasts) is not always related to a quick or slow onset (how fast it arrives).

## #6. Destruction of Infrastructure (What will be left?)

Infrastructure (also called systems) are those permanent structures built by man: houses, buildings, roads, cell phone towers, electrical lines, water treatment plants and city water systems, both clean water delivery and waste & storm water removal, and all the other things built for our public and private use. When these things are destroyed by disasters, it is not just an interruption, but a destruction of the capacity of these systems to provide their intended services. These capacities are important. They provide shelter, food, water, sanitation, transportation, and facilitate services like police protection, fire rescue, and emergency medical response. Once they are destroyed, it can take months or even years to rebuild them.

## #7. Disruptions of Services (Who can help me?)

Services are defined as the activities needed for communities to function. Not just limited to government services, this also includes business and economic activities. It has two aspects: first is the availability of the personnel that perform the services, and second is the infrastructure and equipment required to perform the service.

Services are often identified by priority. For this discussion, let's call them essential services and stability services. Examples of essential services are police security, fire, and emergency medical response. Essential services are directly linked to public safety, security, and emergency response. Stability services include business, healthcare, water and electrical service, waste water and trash removal for sanitation, courts and legal activities, and mail delivery. Stability services provide the things we need to keep our communities peaceful, clean, healthy, and economically active.

Providing these essential and stability services involves two major aspects: first is the ability to support the service providers in terms of pay, equipment, vehicles, fuel, and other sundry arrangements that allow the service providers to perform their respective duties, and second is the ability to physically get to the areas where they need to provide services. The loss of either one of these two aspects will cause the service to be limited (how much can be done) or delayed (how quickly can it be done).

## #8. Aftermath (What comes next?)

Aftermath involves the follow-on effects of a disaster and refers to what happens after there is destruction of infrastructure and a disruption of services. Aftermath manifests itself only partially in the actual loss of the infrastructure and disruption of services. Think about aftermath as things *other than the disaster itself* that keep you

from getting the things you need to survive. It is more closely tied to the government's response to the disaster and the people's reaction to that response. The aftermath of a disaster can be just as bad as or worse than the disaster itself. An effective way to describe aftermath is to look at the term "governance." Governance is different from government. Legitimate and effective governments provide three basic functions of governance: providing security, delivering public goods and services, and providing political participation and accountability.

*Why should you care about governance?* This will be important to you because you will want to know if you are in a safe and secure place or in a dangerous place, if the government has the ability to provide for your needs or not, and whether you have access to the legal system to protect your life, property, rights, and freedoms. The absence of security, services, and civil protections will be important indicators of different kinds of threats you may encounter.

The first aspect of governance is providing security: public security in the form of police, fire, and emergency medical services to protect people, homes, and businesses. This aspect roughly equates to essential services. The potential for civil unrest, looting, and violence becomes a very real threat after a disaster. Security entails more than just the presence of police and National Guard personnel. It also requires the acceptance by the population that the government is in legitimate and capable control of the situation and able to respond to maintain order without suspending individual rights or unreasonably restricting civil liberty. The loss of security in the aftermath of a disaster manifests as limited or no capacity to provide police response for the public, which can result in looting, violence, and other forms of lawlessness.

The second aspect of governance is to deliver the stability services that allow for a functioning society: commerce, health, education, electricity, water, and sanitation. Critical in post-disaster areas are the aspects of health, water, and sanitation. Education can be temporarily suspended, separation from electricity can be endured for a short period of time, but health services, water, and sanitation are paramount. The loss of these services has a direct impact on health and life and will eventually cause security issues, because when a government fails to provide health services, water, and sanitation, they may be seen as a failed or ineffective government. The loss of services in the aftermath of a disaster manifest as disrupted medical services, untreated injuries, exposure to disease, and potential shortages of water and food. You can see how, if these important services were allowed to fail for too long, it could cause dissatisfaction within the affected population.

The third aspect of governance is providing access to political participation and accountability. Before a disaster, this has to do with the right to vote, free speech, and effective courts. But after a disaster, this translates directly to access to justice (due process in a court of law) and is an important part of the idea of legitimacy addressed in providing security. The combination of security and *access to justice* is collectively called rule of law. The loss of rule of law in the aftermath of a disaster manifests as loss of access to due process of law (proper law enforcement) and no access to courts to address civil grievances. This directly impacts on public trust and the public's perception of the legitimacy of government.

In many cases a disaster will include multiple destructive elements, as in the case of both Hurricane Katrina and Super Storm Sandy, where there were hurricanes, storm surges, flooding, the destruction of infrastructure, the disruption of services, lack of food and water, loss of sanitation, and exposure to disease. Despite these similarities, each hurricane had aspects unique to its situation. In the aftermath of Katrina, the dangers included the loss of rule of law, civil unrest, looting, and dangerously hot temperatures. The aftermath of Super Storm Sandy was marked by shortages of medicine, fuel for heating homes, and dangerously cold temperatures. In the aftermath of a disaster, you may be exposed to a variety of threats, such as injury and lack of medical care, exposure to disease, separation from emergency rescue and police pro-



## The Bottom Line (The “BIG 8”)

The idea behind the Big 8 is to provide a framework to define a disaster in real effects. Think of disaster effects as things that separate you from the protection, systems, and services provided by governance. Use this information to make your plans, for both before and after an event, to help you accomplish your most important task: to get yourself and your loved ones to a safe and secure location where there is security, rule of law, and stability services. Most of the bad things about disasters (the loss, the pain, the fear, and the uncertainty) involve separation from these aspects of governance.

Another important point to remember is that the definition or measurements of a disaster are less important than the effects. The names and descriptions are all attempts to describe how much potential power is in an event, but the names are not a direct indicator of the amount of damage that an event can cause. A Category 1 hurricane and a microburst tornado can still cause massive destruction and should not be taken lightly. Knowing how to use the Big 8 to keep yourself informed of your situation will help you make better choices.

What can you do? Be prepared and stay aware.

What does it mean to be prepared and aware? It sounds simple enough: have some supplies, and listen to the radio for news. Having the right supplies is not difficult or expensive. We will address this later in the book. Listening to the radio becomes the difficult task. Understanding the words that are being used during an emergency in respect to what they mean for you is the key to your survival.

This chapter will introduce you to some important language used in emergency management, not just in definitions, but in what they will mean to you during a disaster. When you have completed reading this chapter, you will have improved your ability to understand the nature and scope of different kinds of disaster situations and be better able to choose what will be best for you and your family's preservation.

We will start the definitions with the phrase “Prepared and Aware.” In respect to preparedness it may help to use the military term *readiness*. Readiness means at any time the service member is prepared with an understanding of the mission, educated on the tasks required to complete the mission, and equipped with all the required tools and resources they may need to complete the mission. They are also mentally prepared to work as part of a team or operate independently depending on the situation.

In order for you to be *prepared*, you should understand the types of threats and hazards you may encounter, have the supplies you will need readily available for use, and be ready to take the actions you need to keep yourself and your loved ones safe. A key aspect of this idea is that better understanding allows you recognize your situation sooner, act sooner, and use fewer supplies. The earlier you act, the less expensive in time and resources your actions will be. When you act on your own time schedule, rather than just reacting to things as they happen, you will be less likely to be restricted by the situation.

To be aware is the ability to perceive and understand what is going on around you, the capacity to see, hear, and understand those things that will affect you. It implies not only that you know what is happening around you, but also that you are ready and willing to make informed decisions and take action on your own behalf.

The discussions and definitions that follow will help you in being prepared and aware.

tection, separation from the rule of law, and being left without resources to protect or sustain yourself. Disasters are bad, aftermath can be worse, and the potential threats can be different for each situation, even when the disaster elements are very similar.

One would think that aftermath is unavoidable, but this is not the case. The disaster is only the catalyst for aftermath, but not the cause of it. After a disaster, the people will have an expectation of what the government will do to help them. When the state has the capacity to gather and provide resources and the political will to use the resources to meet the expectations of the people, then the situation becomes highly resilient (but not completely immune) to the effects of aftermath. If government fails in gathering the capacity to respond or lacks the will to act to meet the expectations of the people, then the aftermath is a separate disaster in itself.

## The Language of Disaster

The word disaster originally referred to an astrologically unfavorable aspect to a planet or star that foretold of a great misfortune. This original use holds an important key to the meaning of the word disaster as it is used today. It refers to something that we know can and may happen that will affect us in a negative fashion. If a disaster is an event that is both *possible* and to some extent *probable*, it is *predictable*. Anything we can predict, we can prepare for. The words we will cover are called "So What" words. They are provided to offer food for thought and to inspire you to consider both what they mean and what they mean to you and your survival.

*See facing page for further discussion.*

### Disaster

There are some common themes in the myriad definitions for disaster. Laurie Pearce<sup>3</sup> and Terry Cannon<sup>4</sup>, experts in the field of emergency communication, both note that much of the definition has to do with both the impact and the scale of the event. This idea of initial damage, duration, and area covered is important not just in defining a disaster, but in recognizing an event as a disaster. Keep these things in mind:

- Disasters are non-routine, low-probability, and high-consequence events that are *perceived* as being exceptional and requiring external assistance for recovery by *both those affected and those outside of the area*. This can be a legalistic view, as in the case of Designated Flood Zones and Flood Hazard Areas. In this example the government absolves itself of the responsibility of any response beyond emergency rescue by not recognizing floods in these areas as disasters. These maps can change over time, as do other federal definitions and area classifications. Be aware of changes and stay up to date.
- Disasters lead to increased mortality, illness, and injury, destroy or disrupt people's livelihoods, *and* exceed the capacity of the affected area to respond to it in such a way as to save lives, preserve property, and maintain the social, ecological, economic, and political stability. By these criteria not all destructive or disruptive events are disasters, even if your house is completely destroyed. This will become important when you are deciding how to prepare for different types of disasters and how much help you can expect to receive, if any.
- Disasters can also refer to somebody or something that fails. In the "So What" category, this is important. The failure of those outside an event to recognize and respond to mortality, illness or injury, and disrupted livelihood can be a completely separate disaster in itself. The best example of this is the delays in assistance to the city of New Orleans in response to Hurricane Katrina. Even though, in that case, it was political gamesmanship that caused the delay, it made no difference to the 100,000 people trapped and dying in the city in the summer of 2005. Despite the best intentions of rescuers and federal response agencies in many cases, the response arrived too late, did not meet the needs of survivors, or exposed survivors to secondary threats.

## (Natural Disasters)

## F. Tsunamis

## General Description

A tsunami is one (or more often a series) of highly destructive ocean waves caused by undersea land movements, generally the result of undersea earthquakes, volcanic eruptions, or landslides. When these events take place, the seismic energy transfers to the surrounding water and moves across the ocean.

Tsunami (27)							
Effects	Least						Worst
Areas of Known Occurrence	Known	1	2	3	4	5	Unknown
Scales and Measurement	Before	1	2	3	4	5	After
Quick or Slow Onset	Days	1	2	3	4	5	Minutes
Area of Effect	Local	1	2	3	4	5	States
Duration of Effects	Hours	1	2	3	4	5	Months
Destruction of Infrastructure	Minor	1	2	3	4	5	Total
Disruption of Services	Minor	1	2	3	4	5	Total
Aftermath	Minor	1	2	3	4	5	Disaster

## Major Threat

Tsunamis offer two major threats: a one-two punch of speed and power. Not only will they catch you and drown you, but they will rip apart everything in their path and make a churning, grinding blender of water mixed with everything it encounters. If you get caught in the water, chances are good you will not come out.

## Survival Strategy

Tsunamis kill with water. Avoid the water completely! The force of the water is so great it will grab you and sweep you away even if you have only a part of your body in water. The water will also be filled with solids, the jagged remains of everything the wave has destroyed. This material is moving at speed and with incredible force. Get high up as fast as you can. It will need to be in a building that can withstand huge amounts of force. This means no wooden structures if you can avoid it. Concrete and steel are your best options. The height you will need is at least a three-story building, but the fourth floor or higher is better.

The water will move in, slow as it finds its crest (or highest point of flooding), and then move back out. Do not get into the water, even in a boat, until after the water has swept back out to sea. Your best option is to wait until the water has completely receded.

## Government Information Websites:

National Oceanic and Atmospheric Administration (NOAA) — <http://www.noaa.gov/>

National Weather Service (NWS) — <http://www.weather.gov/>

Federal Emergency Management Administration (FEMA) — <http://www.ready.gov/>

Centers for Disease Control and Prevention (CDC) — <http://www.cdc.gov/>

# The BIG EIGHT

## 1. Areas of Known Occurrence, Possibility

Tsunamis can occur along any ocean coastline around the world. They are most frequent in areas of greater seismic activity. 80% of all tsunamis occur within the Pacific Rim. Tsunamis are always possible and in fact happen every day. The issue is the scale of the event.

## 2. Scales of Measurement, Predictability

There are undersea warning systems that identify tsunamis based on both the original seismic event and the generation of the wave at sea. The limitation on predictability is the short amount of time available to communicate that threat to the public. Even the best tsunami warning systems in the world can sometimes offer only minutes between the warning and the wave impact.

Tsunami damage is measured after the fact in loss of life and property damage. There is no accurate way to determine the size a tsunami will grow to until it reaches landfall. Advanced-warning systems can tell if they are big and fast, but that is about as specific as it can get until the wave makes landfall.

## 3. Quick or Slow Onset

Very quick onset. This is where awareness comes into play. A large tsunami will often first appear as a sharp swell, like a storm swell without the storm. This will be followed by a rapid outrush of water, which will expose the sea floor far below the regular low tide mark. When this happens, you will have only minutes until the first major wave strikes the beach. Do not stop to collect your things: no documents, possessions, clothing, or food. Just take hold of the hands of the people you love, do not let them go, and run for your life.

## 4. Area of Effect

Tsunamis can affect hundreds of miles of shoreline and penetrate miles inland, especially in low-lying areas and up rivers and streams.

## 5. Duration of Effects

It can take several days for the water to recede. Currents coming in and going out can be very strong. The water will also carry everything it has destroyed so the duration will include more than just the water level. Destruction and disease will be part of the duration of a tsunami.

## 6. Destruction of Infrastructure

As with any flooding scenario, the destruction is complete. This will include roads, bridges, buildings, power lines and poles, water distribution infrastructure, and anything else built by the hand of man. Any building left standing will be filled with mud and the bits of everything that was not left standing.

## 7. Disruption of Services

There will be little chance of any services in the affected areas. All assistance will have to come into the area from outside sources until recovery is well under way.

# How Tsunamis Work

A tsunami is one (or more often a series) of highly destructive ocean waves caused by undersea land movements, generally the result of undersea earthquakes, volcanic eruptions, or landslides. When these events take place, the seismic energy transfers to the surrounding water and moves across the ocean.



They develop rapidly as a result of undersea earthquakes and arrive with little warning. Just as you must go underground to avoid a tornado, you must go up to avoid a tsunami. This is another case of awareness being the primary factor. The method, or building, you use to get above the water need only be sturdy enough to take the force of the water coming in and going back out. Tsunamis can affect large areas and may develop into significant aftermath until rescue and resources can arrive. The rescue effort for a tsunami is always a major undertaking as this disaster takes a heavy toll on infrastructure. If you survive a tsunami, be prepared to move as quickly as possible out of the affected area. This will be difficult and you will need all of your skills to move, sustain, and communicate to get to security and sustainment resources.

In open water this is not an issue because even large displacements have room to move or dissipate their energy. A series of tsunami waves may be several hundred miles long, be less than three feet high, and can travel at speeds up to 500 miles per hour. If you were on a ship, you would not even notice them. Even a series of waves would pass almost unnoticed as the tsunamis would pass at intervals of as little as five minutes or as long as an hour, depending on the nature of the original undersea event.

The trouble comes when the tsunamis reach the shoreline. The energy from the wave compresses, building height, and slows, stacking each wave one behind the other until it makes one very high and very deep wave with lots of power and no place to go but onto the land. This means the wave crest may be as high as 100 feet, but also the trough may be a half-mile deep. The force of the wave pushes onto the shore and releases that energy onto whatever it encounters: trees, buildings, cars, people, even the shape of the land. One aspect of the wave dynamic is that the more shallow the slope of the offshore topography, the greater the amount of energy transferred to that composite wave, what the Japanese called the "harbor wave" or tsunami. This is just like the difference of a wave hitting a rock and splashing up into the air and a wave that slides far up the gentle slope of a sandy beach. The same amount of energy is released, but the dynamic of the wave is different.



## 8. Aftermath

The death rate will be high, and the environmental threats will be great. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months. Infrastructure will be annihilated to the point where outside resources will be required to rescue and relocate survivors. Whole communities will cease to exist and will not return. Resources such as food, water, and shelter will not be available until it is brought in. No government services, essential or otherwise, will be available. Security will be lost for a limited period of time in some areas until restored with the assistance of the National Guard or activated federal military forces, and rule of law will not be readily available. Those not killed by the initial tsunami or drowned in the remaining flood will face hunger, exposure to lawlessness, infection from injuries, and exposure to diseases.

### Patterns of Mortality and Injury

In the initial wave landfall, the mortality rate will be high for anyone who is caught in the water. Even the survivors are likely to suffer some form of injury. During rescue and recovery, injuries and infection will be the primary threat. Long-term effects may include medical factors related to exposure to toxic chemicals or disease that mix into the water during the initial destruction. The best way to survive a tsunami, both before and after, is to stay out of the water.

### Government Response

Help will come as rapidly as possible with thousands of responders and huge amounts of relief supplies by ground, rail, sea, and air. This will be a full-spectrum response from all government levels that are still capable of providing any services. The unpredictable nature of tsunamis will limit the initial government response to preposition supplies and currently available personnel for the initial response to the disaster. For details on the plans for your area, contact your local city or county emergency-management office, who will have the response plans.

Primary efforts will include the federal response of FEMA, national relief non-governmental organizations like the Red Cross, and if requested, the active-duty military. The state effort will consist of state-level and National Guard elements. This will include responding communities from outside the area of effect as well as assistance from neighboring states based upon mutual-support agreements called Emergency Mutual Aid Compacts (EMAC). These are agreements rather than contracts, allowing nearby states to provide as much as they can. It is a good system. Local response capabilities will be eliminated due to the damage of the tsunami, but will reestablish jurisdictional control as soon as they are able. State and federal resources will be provided to local government to assist them. Private industry will also arrive as soon as the area is opened to public access, most notably to bring utilities back online, but also to reopen businesses. All of this will include elements to provide the immediately essential services of rescue, medical, security (police and fire), transportation, sustenance (food, water, & shelter), and communication.

After rescue is complete and security is well established, the priorities will be for debris removal, electricity, water, U.S. postal services and other services that are all vital to recovery and stability. Rule of law provided by state agencies and nearby communities will be returned to local authority as soon as possible. This will be dependent on how quickly temporary infrastructure for police stations, legal offices, courtrooms, and jails can be established.

Dependent on the severity of the tsunami and the geographic area of effect, it may take several days for rescue to arrive. This may seem like a long time, but remember they have to travel to you and find you. The better you can mark your location, the quicker you will be rescued.



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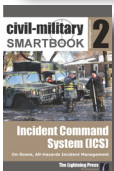


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