AmericanLifelinesAlliance

A public-private partnership to reduce risk to utility and transportation systems from natural hazards and manmade threats

Guideline for Assessing the Performance of Electric Power Systems in Natural Hazard and Human Threat Events: Part 2 - Commentary

April 30, 2004

FEMA

National Institute of BUILDING SCIENCES

AmericanLifelinesAlliance
A public-private partnership to reduce risk to utility and transportation systems from natural hazards and manmade threats

Guideline for Assessing the Performance of Electric Power Systems in Natural Hazard and Human Threat Events: Part 2 - Commentary

April 30, 2004
www.americanlifelinesalliance.org

This report was written under contract to the American Lifelines Alliance, a public-private partnership between the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). A team representing practicing engineers, academics and industry personnel reviewed this report.

Acknowledgments

Although many of the procedures presented here have been validated through experience and practice, this is the first time a pragmatic approach has been developed to assess *system* performance. To accomplish this, it was necessary to enlist the participation of a broad group of experts in engineering and risk analysis. In addition, to ensure a rigorous review process, two sets of review committees were employed in this study: an Advisory Committee that provided industry review, and an Oversight Committee formed by the American Lifelines Alliance to ensure compliance with the goals of that organization.

This Guideline and Commentary was developed by a team of consultants led by ImageCat, Inc. of Long Beach, California. A team representing practicing engineers, academics and industry personnel reviewed this report. The following individuals contributed to this Guideline and Commentary:

Project Team:

Ronald T. Eguchi, Project Manager	ImageCat, Inc., Long Beach, CA
Dennis K. Ostrom	Consultant, Canyon Country, CA
Ronald A. Tognazzini	Consultant, Los Angeles, CA
Craig E. Taylor	Natural Hazards Management, Inc., Torrance, CA
William Graf	URS Corp., Los Angeles, CA
C.B. Crouse	URS Corp., Seattle, WA
Michael Shore	URS Corp., Washington, D.C.

Advisory Committee:

Leon Kempner Jr.	Bonneville Power Administration, Vancouver, WA
Masanobu Shinozuka	University of California at Irvine, Irvine, CA
James H. Wight	San Diego Gas & Electric Co., San Diego, CA

ALA Oversight Committee:

Douglas G. Honegger	D.G. Honegger Consulting, Arroyo Grande
Stuart Nishenko	Pacific Gas & Electric Co., San Francisco, CA
William U. Savage	U.S. Geological Survey, Menlo Park, CA
Joseph Steller	American Lifelines Alliance, Washington, D.C.

Table of Contents

List of Tables

List of Figures

1.0 Introduction

This Commentary contains supplementary information supporting the development and implementation of the Guideline. While not integral to the implementation of the Guideline, this information is useful for understanding the underlying models that are referenced in the approach and the data needed to screen out certain hazards and/or areas from detailed investigations.

This Commentary is a product of several iterations of working papers. The working papers introduced different ways of characterizing hazard, component, and system performance, and tested various ways of guiding users through the Guideline. This Commentary contains the elements of the working papers that provide useful information related to the implementation of the Guideline.

For purposes of reference, this Commentary is intended to address all key components of electric power systems: transmission substations, transmission lines, transmission and communication towers and distribution poles, distribution substations, distribution lines, distribution service transformers, low voltage control, protection and communications systems (e.g., SCADA), general office buildings, maintenance buildings, and operations buildings and their equipment.

1.1 Contents

This Commentary is made up of six major sections.

- Recommended methods of analysis for performing hazard, component vulnerability and system performance assessments (see Section 2.5 of the Guideline) – **Section 2**,
- A description of the methodology and data used to determine hazard level criteria for the Guideline (see Table 4-1 in Guideline) – **Section 3**,
- Annotated references – **Section 4,**
- Acronyms for key terms used in the Guideline and Commentary – **Section 5**,
- Terms and Definitions – **Section 6**, and
- Hazard tables for the U.S. – **Appendix A**.

Each of these sections is self-contained; no attempt has been made to integrate these discussions into a standalone report. The main purpose of this Commentary is to support the implementation of the Guideline.

1.2 Limitations and Qualifications

The studies, examples, reports, maps, and references provided in this Commentary are believed to be state-of-the-practice, at the time of this writing. As with most guideline material, advances are expected to occur in technology and knowledge that will require this material to be reassessed for appropriateness. As such, this "living" document will require updating over time.

While the materials in this Commentary were developed with U.S. utilities in mind, much of the material is applicable worldwide (with the exception of the hazard maps in this Commentary and hazard tables in the Appendix), especially the methods of analysis that are introduced in Section 2.

2.0 Methods of Analysis

This section describes methods to quantify hazard potential and severity, power equipment fragility or vulnerability, and system performance. The concept of methods of analysis was introduced in Section 2.5 of the Guideline. Whereas, Tables 5-4 through 5-9 in the Guideline provide a listing of recommended tasks for each analysis, the tables contained in this section (Tables 2-1 through 2-11) identify current procedures and practices that have been used to carry out these analysis in past projects. The tables include comments that discuss the advantages and disadvantages (“pros” and “cons”) of each method, when each method is most applicable, and pertinent resource documents describing the methodology. The tables include a determination of analysis level according to Levels 1, 2 or 3. This information is useful in achieving consistency of methods with respect to the level assignments provided in the Guideline by offering methods of varying detail and sophistication.

This section begins with a discussion of methods to assess natural hazards and human threats, proceeds to analysis methods for assessing equipment and building/equipment vulnerabilities, and ends with a presentation of methods for assessing system performance.

2.1 Natural Hazard Assessment

The list of natural hazards that are covered in this study are: a) earthquakes, including surface fault rupture, liquefaction and ground shaking effects, b) permanent ground movement hazards (non-earthquake induced), including landslides, frost heave, and settlement, c) windstorms, including severe wind, hurricane wind and tornado, d) icing, and e) floods (including riverine and storm surge).

In general, most of the hazards can be addressed on a regional basis. For example, earthquake, wind storms, hurricane wind and storm surge, tornado, icing, and flooding hazards have all been mapped, largely for the entire contiguous U.S. Other hazards, such as settlement and some ground failure hazards caused by earthquake (liquefaction), are generally mapped for local areas; i.e., no national maps are available to characterize the frequency or severity of these effects. Where available for local areas, these maps or databases are identified in the tables that follow.

2.1.1 General Description of Methods

The three methods used to quantify natural hazard impacts on electric power systems are presented below:

- **Expert Opinion** methods provide estimates based on previous work of experts in the region of interest or in regions of similar natural hazards characteristics. The expert performs few or no calculations and submits minimal documentation, e.g., a letter report. This approach is useful when published data are not available and when site-specific investigations are too expensive.

- **Published Data/Information** are estimates based on relevant data and/or information obtained from credible publications or web sites, such as those produced by the

U.S. Geological Survey, state geological surveys (e.g., California), national weather services, or universities. Data can be obtained quickly, and the results are usually accurate. Regional studies may overlook or not address local hazards.

- **Site-specific Studies** are most accurate and will, in many cases, include probabilistic assessments of the hazard. These methods can be costly and may require longer time frames to complete. For critical projects or assessments, this is usually the preferred method of analysis.

2.1.2 Methods to Assess Natural Hazards

Tables 2-1 through 2-5 list current procedures and practices for assessing earthquake hazards (ground motion, fault rupture, landslide, lurching, liquefaction, lateral spreading, settlement, tsunami and seiche), ground movement hazards – non-earthquake geohazards (gravity landslide, expansive soil, soil collapse, and frost heave), wind hazards (wind storm, tornado, and hurricane), icing, and flooding (riverine and storm surge), respectively.

Table 2-1. List of Current Procedures and Practices for Quantifying Earthquake Hazards

EARTHQUAKE HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Ground Motion	**Expert Opinions - Level 1**	Estimates based on previous work of expert in region of interest or in regions of similar seismic characteristics. Expert performs few or no calculations, and submits minimal documentation, such as a letter report.	Estimates can be quite accurate depending on qualifications and relevant experience of expert.	Approach is generally more time-consuming and expensive than approaches using published information.	When published data are not available and site-specific approaches are too expensive.	Not applicable.
	Published Data/Information - Level 2	Relevant ground-motion data obtained from credible publications or web sites, such as those produced by the U.S. Geological Survey, state geological surveys (e.g., California), earthquake engineering centers or organizations (e.g., Southern California Earthquake Center - SCEC), or universities.	Data can be obtained quickly and are usually accurate.	Studies are usually regional and may overlook local faults, seismic sources, or ground conditions that may be important. Many of the regional studies estimate ground motions for assumed local geology (e.g., bedrock), which may not be appropriate for site(s) of interest.	When cost or time considerations prohibit site-specific studies.	USGS (1997b); Frankel et al. (2000); USGS (2002); and the USGS website, http://eqhazmaps.usgs.gov/, provide rock-site ground-motion seismic hazard data for the U.S.
	Site-Specific - Level 3	Ground-motion hazard computed for site or sites using established probabilistic seismic hazard analysis (PSHA) methods.	Method is most accurate and robust. Current information on regional seismic sources and local geology can be easily incorporated.	Implementation of method is more expensive and time consuming than other two approaches.	When cost and time considerations are not excessively restrictive. Method is more appropriate for large systems affecting major population centers in seismic areas or for systems that would have adverse consequences, if incapacitated.	Cornell (1968) provides basic methodology.

Table 2-1. List of Current Procedures and Practices for Quantifying Earthquake Hazards (Continued)

EARTHQUAKE HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Fault Rupture	**Expert Opinions - Level 1**	Estimates based on previous work of expert in region of interest or in regions of similar seismic characteristics. Expert performs few or no calculations, and submits minimal documentation, such as a letter report.	Estimates can be quite accurate depending on qualifications and relevant experience of expert.	Approach is generally more time-consuming and expensive than approaches using published information.	When published data are not available and site-specific approaches are too expensive.	Not applicable.
	Published Data/Information - Level 2	Maps of potentially active faults can be obtained for some western states (e.g., CA, OR, WA, NV, UT, AZ) from primarily the state geological surveys, but publications describing the fault-rupture displacement hazard are more difficult to find, are unavailable, or do not exist.	Fault maps are relatively easy to obtain and at reasonable cost.	Data or information on fault displacements is difficult if not impossible to obtain from the literature.	When location of active fault is of primarily interest or when cost and time constraints prohibit site-specific study.	Not Applicable. Fault maps, if available, can usually be obtained from the appropriate state agency.
	Site-Specific - Level 3	Office-based studies and sometimes field investigation are required to estimate fault-rupture hazard.	Approach is only available method in most cases to accurately estimate fault-rupture hazard.	Approach can be time consuming and expensive.	When key components are located in known or suspected active fault zones and estimates of the rupture hazard are required for reliability assessments	Formal methodology described in Youngs et al. (2003); McCalpin (1996); Nyman et al. (2003).

P

Table 2-1. List of Current Procedures and Practices for Quantifying Earthquake Hazards (Continued)

EARTHQUAKE HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Ground Failure (Landslide, Lurching, Liquefaction, Lateral Spreading, Settlement)	**Expert Opinions - Level 1**	Estimates based on previous work of expert in region of interest or in regions of similar seismic characteristics. Expert performs few or no calculations, and submits minimal documentation, such as a letter report.	Estimates can be quite accurate depending on qualifications and relevant experience of expert.	Approach is generally more time-consuming and expensive than approaches using published information.	When published data are not available and site-specific approaches are too expensive.	Not applicable.
	Published Data/Information - Level 2	Maps of potential liquefaction and landslide areas are available for some locations, but landslide-prone areas are not confined to seismic regions.	Maps are easy to obtain.	Information on the permanent ground displacement hazard, which is of primary importance, typically is not available or does not exist. Maps of potential hazard exist for relatively few locations. Conservatism is often built into such maps.	When location of ground-failure hazard is of primary interest or when cost and time constraints prohibit site-specific study.	▪ Available liquefaction maps are listed in Power and Holzer (1996); California Geological Survey (www.consrv.ca.gov/cgs) ▪ Information on available landslide maps for California, for example, can be found on website hhttp://www.consrv.ca.gov/cgs/rghm/landslides/ls_index.htm. ▪ Various websites contain information for obtaining maps for liquefaction and landslide hazards; these websites can be accessed through key word searches.
	Site-Specific - Level 3	Methods have been developed to estimate (1) probability of liquefaction or landslide at given locations, and (2) annual probability of permanent ground displacement due to liquefaction or landslides.	Only available procedure when published information is not available.	Methods are generally difficult to apply and few professionals have developed and implemented methods. Methods can be expensive and time consuming.	When data are necessary for reliability assessments.	▪ Methods for computing probability of liquefaction can be found in National Research Council (1985), p. 174-189 and MCEER (1999). ▪ Method for probabilistic treatment of landslides with application can be found in USGS Open-File Report 98-113 (USGS, 1998).

Table 2-1. List of Current Procedures and Practices for Quantifying Earthquake Hazards (Continued)

EARTHQUAKE HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Inundation (Tsunami & Seiche)	**Expert Opinions - Level 1**	Estimates based on previous work of expert in region of interest or in regions of similar seismic characteristics. Expert performs few or no calculations, and submits minimal documentation, such as a letter report.	Estimates can be quite accurate depending on qualifications and relevant experience of expert.	Approach is generally more time-consuming and expensive than approaches using published information.	When published data are not available and site-specific approaches are too expensive.	Not applicable.
	Published Data/Information - Level 2	Maps of tsunami hazard can be obtained for the west coast of the continental U.S. and Hawaii, where the hazard is greatest.	Tsunami hazard maps are relatively easy to obtain.	Maps may not reflect local conditions at a particular coastal site. Seiche hazard maps typically do not exist.	When cost or time considerations prohibit site-specific study.	See National Tsunami Hazard Mitigation Program website. www.pmel.noaa.gov/tsunami-hazard/
	Site-Specific - Level 3	Office-based studies are required to estimate tsunami or seiche hazard	Studies would provide more accurate information.	Studies would be too time consuming unless a sufficient amount of previous work had been done to serve as a starting point.	When key components are located in high tsunami/seiche hazard areas.	Synolakis (2003).

Table 2-2. List of Current Procedures and Practices for Quantifying Ground-Movement Hazards (non-earthquake induced)

GROUND-MOVEMENT HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
• **Gravity Landslide** • **Expansive Soil** • **Soil Collapse** • **Frost heave**	**Expert Opinions - Level 1**	Estimates based on previous work of expert.	Estimates likely to be better than those obtained directly from available regional studies.	Approach may not provide accurate assessment of hazard if expert does not have adequate local database.	When data or publications on hazard in location of interest are not available or too time consuming to compile or interpret.	Not Applicable.
	Published Data/Information - Level 2	Relevant data/information obtained from credible publications or websites.	Data/information can be obtained quickly.	If available, data/information is usually for broad regions at small scales and thus not very useful for specific local areas. None of the information is cast in a probabilistic framework suitable for risk analysis.	When adequate information is available.	Many publications are available and can be obtained by using library-reference or web searches. However, few are likely to have information for a particular location. The USGS, NOAA, and state geological survey websites can be quick sources of information.
	Site-Specific - Level 3	Qualified professional firm performs evaluations and analysis.	Approach better addresses local hazards if expert opinions and published data/information are not available or feasible.	Can be expensive and time consuming and would only provide a qualitative description of likelihood of hazard (e.g., low, medium, high) and perhaps its possible extent of movement.	When key components are located in vicinity of hazard that is considered potentially severe and when other approaches are inadequate.	Many publications are available on the identification and evaluation of the hazard, but none presents method to quantify hazard probabilistically for risk assessment.

Table 2-3. List of Current Procedures and Practices for Quantifying Wind Hazards

WIND HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
• **Wind Storm** • **Tornado** • **Hurricane**	**Expert Opinions - Level 1**	Estimates based on previous work of expert in region of interest or in regions of similar wind characteristics. Expert performs few or no calculations, and submits minimal documentation, such as a letter report.	Estimates can be quite accurate depending on qualifications and relevant experience of expert.	Approach is generally more time-consuming and expensive than approaches using published information.	When published data are not available and site-specific approaches are too expensive.	Not applicable.
	Published Data/Information - Level 2	Data obtained from national wind maps published in building codes and from literature.	Data can be obtained quickly and are usually accurate.	Information is usually regional and would likely overlook local conditions that could affect wind velocity.	When cost or time considerations prohibit site-specific studies.	Wind velocity maps can be found in ASCE 7-02, for example.
	Site-Specific - Level 3	Wind hazard computed using probabilistic wind hazard analysis (PWHA) similar to PSHA method for ground motion.	Method is most accurate and robust, and can include local data affecting wind velocities.	Implementation of method is more expensive and time consuming than other two approaches.	When cost and time considerations are not excessively restrictive. Method is more appropriate for large systems affecting major population centers in wind hazard areas or for systems that would have adverse consequences, if incapacitated.	Site-specific model can be constructed from information in ALA (2002a, 2002b).

Table 2-4. List of Current Procedures and Practices for Quantifying Icing Hazards

ICING HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Ice Accumulation on Structures, Equipment, etc.	**Expert Opinions - Level 1**	Estimates based on previous work of expert in region of interest or in regions of similar icing characteristics. Expert performs few or no calculations, and submits minimal documentation, such as a letter report.	Estimates can be quite accurate depending on qualifications and relevant experience of expert.	Approach is generally more time-consuming and expensive than approaches using published information.	When published data are not available and site-specific approaches are too expensive.	Not applicable.
	Published Data/Information - Level 2	Data obtained from publications, maps.	Data can be obtained quickly and are usually accurate.	Information is regional and may overlook local conditions.	When cost or time considerations prohibit site-specific studies.	The U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL) website (www.crrel.usace.army.mil/) has information including links to U.S. map of ice accumulation with 50-yr mean recurrence. ASCE Standard 7-02 (ASCE, 2003a) also provides icing maps for the U.S.
	Site-Specific - Level 3	Probabilistic model based on meteorological data and local conditions.	Method is most accurate and can account for local conditions.	Implementation of method is more expensive and time consuming than other two approaches.	When cost and time considerations are not excessively restrictive. Method is more appropriate for large systems affecting major population centers in icing hazard areas or for systems that would have adverse consequences, if incapacitated.	Site-specific model can be developed from sufficient historical ice-storm data.

Table 2.5. List of Current Procedures and Practices for Quantifying Flood Hazard

FLOOD HAZARD	PROCEDURES AND PRACTICES	DESCRIPTION OF METHOD USED TO QUANTIFY LIKELIHOOD OF HAZARD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
• **Riverine** • **Headwater** **(Flood from dam or tank failure is not a natural hazard, but should be considered)**	**Expert Opinions – Level 1**	Estimates based on previous work of expert in region of interest or in regions of similar flood characteristics. Expert performs few or no calculations, and submits minimal documentation, such as a letter report.	Estimates can be quite accurate depending on qualifications and relevant experience of expert.	Approach is generally more time-consuming and expensive than approaches using published information.	When published data are not available and site-specific approaches are too expensive.	Not applicable.
	Published Data/Information – Level 2	Hazard maps and data available from FEMA, USGS, NOAA, USACOE.	Data can be obtained quickly and are usually accurate.	Local conditions affecting hazard may be overlooked.	When cost or time considerations prohibit site-specific studies.	ALA (2002a, 2002b); FEMA (1996).
	Site-Specific – Level 3	Flood hazard computed using established probabilistic methods incorporating regional and local data.	Method is most accurate.	Implementation of method is more expensive and time consuming than other two approaches.	When cost and time considerations are not excessively restrictive. Method is more appropriate for large systems affecting major population centers in flood hazard areas or for systems that would have adverse consequences, if incapacitated.	ALA (2002a, 2002b).

P

2.2 Human Threat Assessment

Human threats encompass a wide range of possible hazards: biological, chemical, radiological, blast, and cyber attacks. Unlike threats from natural hazards, human threats are more difficult to quantify and there is usually very little statistical information upon which to draw. Furthermore, the available information may be proprietary or confidential for business and/or security reasons. Because of these challenges, assessment of human threats must be based on new and partially tested methods. In many cases, the use of experts (particularly those knowledgeable about these threats) is the only useful means of establishing a rough estimate of risk or vulnerability.

2.2.1 General Description of Methods

Three general methods for assessing human threats are presented below:

- **Estimate** methods are based on judgment or the determination of individuals who have specific knowledge about potential human threats, i.e., Director of Security, Chief Information Officer. This method applies mainly to internal company resources.
- **Expert Opinion** methods are based on the opinions or judgment of informed individuals, e.g., law enforcement or military intelligence officers who have access to current human threat information, individuals from the academic or consulting community that study particular types of human threats, or other individuals who can be considered experts by virtue of their knowledge of prior events on specific components or systems.
- **Statistical** methods are based on a probabilistic analysis of specific types of human threats that identify their potential or likelihood. The methods may involve the use of proprietary databases that may reside only within the company's data files.

2.2.2 Methods to Assess Human Threats

Table 2-6 contains a listing of general methods used for assessing human threat potential. In addition to describing each method, the benefits (Pros) and limitations (Cons) of each method are identified.

Table 2-6. List of Current Procedures and Practices for Quantifying Human Threats

PROCEDURES & PRACTICES	DESCRIPTION OF THE METHOD	PROS	CONS
Estimate – Level 1	Estimates based on judgment or the determination of individuals, i.e., Director of Security, Chief Information Officer or other individual who has specific knowledge about potential human threats.	Can be an inexpensive and quick approach because of the reliance on personal expertise and knowledge.	This approach is limited by prior knowledge of the human threat. Individuals with knowledge about one type of hazard may not be aware of other types of hazard.
Expert Opinion – Level 2	Opinions based on the judgment of informed individuals i.e. law enforcement or military intelligence officers who have access to current human threat information, individuals from the academic or consulting community who study particular types of human threats or other individuals who can be considered experts by virtue of their knowledge of prior events on specific components/systems.	Can provide confidence in the evaluation of the likelihood of one or more human threats. Confidence comes from the identification of adversary, intent, capability, history, and quantifiable threat levels. This method can be accurate enough to base specific mitigation measures on.	This method is generally more expensive and time consuming than a potentially readily available estimating method. This method may be moderately time consuming to locate and obtain a qualified opinion of the threat to particular components/systems. This method provides a qualitative rather than a quantitative estimate. As a result, the estimate is generally not very precise.
Statistical – Level 2	Probabilistic analysis of specific types of human threats to identify their potential or likelihood.	Provides a mathematically robust evaluation of verifiable, existing data that can be used in a statistical evaluation of risk. Sources may include open file reports or local, state or federal agencies or their information centers.	This evaluation may be very precise in describing the hazard, but potentially can be inaccurate because of the historical data of particular types of human threats on specific components/ systems may not be available or may not be credible. Historical data are often proprietary and not available in open file reports or available from governmental agencies.

2.3 Assessment of Equipment Vulnerabilities – Natural Hazards

Unlike human threats, there exists an abundant amount of data on the performance of electric power equipment to natural hazards, especially earthquakes. In this section, a range of methods is presented that have been used in prior studies to assess the risk or level of vulnerability of these equipment types. After defining the different types of methods, Table 2-7 describes their application.

2.3.1 General Description of Methods

The four methods used to assess electric power equipment performance due to natural hazards are:

- **Estimate** methods use judgment based on indirect or inference from knowledge. Usually senior or the most knowledgeable staff members estimate individually and then compare their estimates in a group.
- **Informed Estimates** methods use judgment based on direct knowledge of component performance. This assessment can consider performance for varying levels of hazard intensity. As in the "Estimate" method, senior staff members estimate performance individually and then compare estimates as a group.
- **Statistical** methods are based on experience data, often acknowledging different hazard loading levels. Applied mostly in the case of earthquake studies, where large data sets on past performance have been compiled.
- **Analytical** methods are based on structural evaluations of deflections, strains, and in some cases, stress at key locations. The most detailed of all methods mentioned. Usually requires the use of structural analysis software codes.

2.3.2 Equipment Performance from Natural Hazards

Table 2-7 lists methods that have been used to assess electric power equipment performance due to natural hazard loads. As in other previous tables, the advantages and disadvantages in using each method and resource documents are included.

Table 2-8 describes the various kinds of loading that can be used for equipment qualification. In general, these methods apply to earthquake loadings.

Table 2-7. List of Current Procedures and Practices for Quantifying Equipment Component Performance Against Natural Hazards

METHOD	DESCRIPTION OF THE METHOD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Estimate – Level 1	Use of judgment based on indirect or inference based knowledge. Senior or most knowledgeable staff first guess individually and compare and discuss in a group and arrive at a consensus. For example: Low voltage switchgear used in navy destroyer ships will likely withstand earthquake shaking, a 220kV circuit breaker (CB) similar in all respects including manufacturer when compared to a qualified 500kV CB will likely be at least as robust as the 500kB CB. Some components fail for no apparent reason during an earthquake and some have relatively low conductor slack. In future earthquakes, components connected with less slack will tend to fail more than those with more slack.	This approach can create data where there is none and allows the user to enter his limited knowledge in a risk assessment tool. This method can be a very inexpensive and offers a quick approach because the individual or team relies on his or their own expertise and knowledge.	User can be led to believe that the final answer is more accurate than it really is. Accuracy is based on the team guessing the critical failure modes and load amplitudes. Confidence in the answers should be low.	Use when very little or no experience data exists. Results based on this data should only be used to determine whether potential for significant risk from hazard exists or plan for post disaster response.	PEER report, internal utility memos. See http://peer.berkeley.edu/
Informed Estimates – Level 1	Use of judgment based on direct knowledge of component performance to varying hazard intensity or similar applicable loading (for earthquakes, see Table 2-8 below). Senior or most knowledgeable staff, first estimate performance individually and then compare and discuss in a group and arrive at a consensus. For example: Based on past experience certain 220kV LT (live tank) CB (circuit breaker) are consistently more damaged than DT (dead tank) CBs to earthquake loading. In a future earthquake, 220kV CBs in position with LT CB will likely fail before those with DT CBs.	This approach provides data that is based or anchored to experience. This method can be a very inexpensive.	User can be led to believe that the final answer is more accurate than it really is. Accuracy is based on the data being applicable. Confidence in the answers can be very low to high depending on the amount and nature of data.	Use when some experience data exists but not enough to have well behaved statistics. Results based on this data should only be used to determine whether potential for significant risk from hazard exists, plan for post disaster response, or identify relatively vulnerable points in system.	PEER report, internal utility memos; EPRI (2002).

Table 2-7. List of Current Procedures and Practices for Quantifying Equipment Component Performance against Natural Hazards (Continued)

METHOD	DESCRIPTION OF THE METHOD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Statistical – Level 2	Probabilistic analysis of components based on experience data derived from previous hazard loading or various similar loading sources (for earthquakes, see Table 2-8) on similar components. For example: Based on experience data, a certain component has a stated probability of failure when earthquake induced shaking reaches a certain level.	Provides a mathematically robust evaluation of existing data that can be used in a statistical evaluation of risk. This approach is only a little more expensive than using estimates or informed estimates if the data exist.	This evaluation may be very precise in describing the hazard, but can be inaccurate in assessing performance because the historical data may not be available or may not be applicable.	Can be used for determining accurate return on investment for proposed system upgrades.	Sources may include open file reports from local State and Federal agencies or their information centers.
Analytical – Level 3	Mathematical evaluation that involves modeling component to obtain deflections, strains and in some cases stress at key locations of component with various mountings to various motions. For example: Based on calculations, when a certain component is subjected to a defined level of shaking, enough members yield such that a mechanism is created. The amount of potential energy in the system will drive the mechanism such that displacement constraints are exceeded and by definition the component fails.	This method is very flexible in that any condition that is desired can be modeled and studied. This method can be relatively expensive, even for one component.	Modeling certain failure modes of electrical components requires an understanding of the failure process.	Can be used for raising confidence of any fragility model derived from estimates or informed estimates.	

Table 2-8. Loading Sources for Component Vulnerability Analysis – Earthquake

DATA SOURCE	DESCRIPTION	PROS	CONS	USE	REFERENCES
Shipping	Documenting loading that components undergo while being shipped. Compare shipping loading to hazard loading.	Shipping loading is actual loading that equipment has actually experienced. Shipping loads may exceed hazard loads, is inexpensive and there is a high confidence in its reliability.	Shipping load data may not apply because, some equipment (especially fragile equipment) may be disassembled and protection packaged for shipment or there are problems duplicating installation conditions. Component are not loaded to failure so shipping data may underestimate fragility.	This approach is best used to verify that a component is robust under hazard loading. This data can be used to develop results based on estimates alone when no other data exists and to augment data based on informed estimates and verify statistical data.	Internal utility memos.
Qualification testing	Qualification testing (QT) of component to IEEE 693 or other standard.	QT data can be created as needed. Lots of QT data already exists (many components tested) and more data is being generated all the time. QT data represents actual shaking of component so that all QT tested component failure modes are considered. There is high user confidence	There is inadequate low frequency content in QT table motion. There are some equipment that can't be QT'd. During QT, there are problems duplicating installation and mounting conditions. QT is relatively expensive, there is insufficient data for any one component to provide high math confidence in a risk assessment. During QT, component is not taken to failure, so Qt data underestimates fragility.	This data can be used to develop results based on estimates when no other data exists and to augment data derived from informed estimates and verify statistical data.	IEEE 693 Standard (1997).
Fragility testing	Fragility Testing (FT) of one or more components to failure. This could be a subset of qualification testing.	FT is actual shaking of component to failure. This is what is desired for a SERA (Ostrom, 2003, Ostrom et al., 1992) analysis (a vulnerability assessment software program used by the power industry). FT can provide data of highest user confidence.	There is inadequate low frequency content in FT table motion. There are some equipment that can't be FT'd. During FT, there are problems duplicating installation and mounting conditions. FT is relatively expensive. Currently, there are insufficient data for any one component to provide high statistical confidence and there are no standards for assuring consistent FT.	These data can be used to develop values based on estimates, informed estimates, and/or statistics.	

2.4 Assessment of Building/Equipment Vulnerabilities

In the context of this Commentary, buildings and service equipment apply mainly to those facilities that help in the transmission and/or distribution of electricity. In general, these facilities tend to be structures or buildings that house substation equipment, or help in the monitoring and control of power distribution.

2.4.1 General Description of Methods

The four general methods for assessing the vulnerability of buildings are:

- **Graphic** methods allow simple overlays of building locations and hazard maps. Generally applied with the use of GIS methodologies or mapping tools. Also requires existence of regional or national hazard maps.
- **Loss Estimation Tools** utilize standard loss estimation models. A good example is HAZUS, a standardized loss estimation tool developed for the Federal Emergency Management Agency (FEMA) for earthquake, wind and flood hazards. Generally applicable for the analysis of large portfolios of buildings and structures. General-use loss estimation tools (e.g. HAZUS) are less well developed for building service equipment than for building structures, and are rather crude for electric power equipment.
- **Expert Screening with Site Surveys** relies on the expertise of structural engineers. Uses detailed information on the design and construction of a building; may involve simple calculations to estimate general loads and structural capacities. An on-site inspection by the engineer is almost always required. Site surveys to evaluate electric power equipment are generally referred to as “walk-downs” and involve observation of equipment anchorage and bracing conditions, classification of components for vulnerability, and detection of obvious site deficiencies (e.g., landslide hazard).
- **Structural Analysis** methods are based on the use of structural analysis techniques, e.g., finite-element modeling, or time-history analysis. This requires detailed information on the building and its components. Can predict or estimate where weak links in a building or system exist. Structural analysis of equipment for seismic loads may involve computing the severity of shaking demands (spectra) at equipment mounting points, for comparison with equipment qualification specifications developed through shake-table testing.

2.4.2 Methods to Assess Building and Equipment Vulnerabilities

Table 2-9 contains a list of methods to quantify the vulnerability of buildings and their associated equipment and when each method is most applicable. In addition, a list of resource documents that provide additional examples of how these methods have been applied in practice is provided.

Table 2-9. List of Current Procedures and Practices for Quantifying the Performance of Buildings and Service Equipment

SYSTEM / COMPONENT	METHOD	DESCRIPTION OF METHOD	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Buildings	**Basic GIS – Level 1**	Natural hazard screening using GIS tools or published digital data and maps.	Rapid and efficient. Identifies which natural hazards can affect the system. Eliminates some hazards from further consideration for all or some of the system. May suggest alternative locations for new facilities.	Very crude and approximate. Does not consider specific component vulnerability. Does not provide estimates of risk in terms of dollar losses or risk mitigation options.	This is appropriate as a first step in any analysis, at any level. For larger utilities, this may be performed in-house, to define a further scope of work to be executed by others. Especially useful for flood, where elevation of building compared to flood levels determines risk.	Uniform Building Code (ICBO, 1997); ASCE Standard 7-02 (2003a); International Building Code 2003 (ICC, 2002).
	Loss Estimation Software – Level 2	Desktop study using HAZUS or other scenario-based risk assessment software, with multi-hazard capability	Rapid and efficient. Provides preliminary, order-of-magnitude estimates of economic loss and downtime for the defined (usually maximal) scenarios. May serve as a basis for eliminating some hazards or part of the system from further evaluation.	Crude and approximate. Limited to arbitrary defined scenarios. Few 'system' models are provided, so business interruption loss estimates are crude. Does not provide loss reduction measures, or quantify their benefits. May require several consultants with different software packages, which can produce inconsistent results.	HAZUS is only applicable to earthquake, wind and flood. Such software provides only a subset of the total financial losses and downtime, for building and a few common equipment types.	FEMA (2003a); Wong et al. (2002).
	Expert Screening with Site Surveys – Level 2	Vulnerability screening survey by experts. Includes walkdown to identify structural categories, typical weaknesses and candidate loss reduction measures for each significant hazard. Criticality, costs and benefits of each risk reduction measure are qualitatively rated	Rapid and efficient. Defines significant concerns for each hazard. When considered in combination with hazard severity and frequency, this method can be used to identify buildings requiring further study using more formal, quantitative methods.	Approximate and judgmental. Results vary according to the framework and personnel used to do the survey. This is a simple approach, but demands high level of experience and judgment to be effective.	Appropriate for large or for critical buildings, such as emergency operations centers, engineering offices, and for facilities required for post-event repair and recovery. May be appropriate for intermediate sized buildings, especially where previous screening studies have identified potential high risks.	Earthquake: Scawthorn (1986); ASCE/SEI 31-03 (2003b); FEMA 356 (2000). Wind and flood: ASCE 7-02 (2003a). Blast, fire and other impacts: FEMA 386-7 (2002a). FEMA 426 (2003b).

Table 2-9. List of Current Procedures and Practices for Quantifying the Performance of Buildings and Service Equipmenet (Continued)

	Engineering Structural Analysis – Level 3	Methods based on the use of structural analysis techniques, e.g., finite-element modeling, or time-history analysis. Requires detailed information on the building and its components. Can predict or estimate weak links in a building or system.	Improved accuracy. Allows rational, systematic assessment of many aspects of building vulnerability, the determination of damage states for various scenarios, and the effectiveness, in terms of reductions in overstress or drift, or various structural retrofit options.	Requires quantitative evaluation of hazard scenarios. Costly and time consuming. Results vary with methods and software chosen, expertise of user, etc. Often difficult to assign dollar losses to buildings or components for a given damage state.	Appropriate for large or critical buildings, such as emergency operations centers, utility engineering offices, and for facilities required for post-event repair and recovery. May be appropriate for intermediate sized buildings important to operations, especially where previous screening studies have identified potential high risks.	Earthquake: Scawthorn (1986); ASCE/SEI 31-03 (ASCE, 2003b); FEMA 356 (2000). Wind and flood: ASCE 7-02 (2003). Blast, fire and other impacts: FEMA 386-7 (2002a); FEMA 426 (2003b).
Building service equipment	**Expert Screening with Site Surveys – Level 1/2**	Vulnerability screening survey by experts or specially trained maintenance personnel. Includes walkdown to identify typical weaknesses and required loss reduction measures for each significant hazard. Criticality, costs and benefits of each risk reduction measure are qualitatively rated – Level 1/2.	Rapid and efficient. Defines significant concerns for each hazard. May be used to assign vulnerability relationships. When considered in combination with hazard severity and frequency, this method can then be used in quantitative methods.	Approximate and judgmental. Results vary according to the framework and personnel used to do the survey. This is a simple approach, but demands high level of experience and judgment to be effective.	Appropriate for equipment important to the function of large or for critical buildings, such as emergency operations centers, utility engineering offices, and for facilities required for post-event repair and recovery. Appropriate for intermediate sized buildings, especially where post-event function is important.	Earthquake: FEMA 74 (1994); McGavin (1981); McGuire (1990). Wind & flood: ASCE 7-02 (2003a). Blast, fire and other impacts: FEMA 386-7 (2002a); FEMA 426 (2003).

2.5 Assessment of Equipment Vulnerabilities – Human Threats

The operating equipment in electric power systems may be vulnerable to human threats. As indicated earlier, human threats include: a) biological, b) chemical, c) radiological, d) blast, and e) cyber attacks. The types of equipment that are being considered include that associated with low voltage control, protection and communication systems (e.g., SCADA).

2.5.1 General Description of Methods

The following four methods are used to assess human threats to equipment:

- **Estimate** methods are based on the judgment or the determination of individuals, i.e., Director of Security, Chief Information Officer, or other individuals who have specific knowledge about component/system vulnerabilities. This method applies mainly to internal resources.
- **Expert Opinion** methods are based on the judgment of informed individuals, e.g., law enforcement, military intelligence officers, or other individuals who can be considered experts by virtue of their knowledge of prior events on specific components/systems and are knowledgeable about network architecture, system components, barrier systems, SCADA, computer security systems, business procedures/databases and communications systems.
- **Simulation** methods are especially adaptable for measuring system impacts or effects. They usually require a detailed characterization of the system and its operation. This method can be limited using specific scenarios or fully probabilistic (i.e., accounting for all quantifiable uncertainties, including the occurrence of the threat).
- **Penetration Tests** are methods that involve active scanning and/or penetration tools for identifying vulnerabilities. These methods often involve the establishment of rules of engagement, a white cell for continuous communication with the electric power utility and an undercover red cell that performs the reconnaissance, scenario development and exploitation.

2.5.2 Equipment Vulnerabilities from Human Threats

Table 2-10 contains a preliminary list of current procedures and practices for quantifying the vulnerability of equipment due to human threats. The various methods that are described in the table have been defined above. The pros and cons of each method have also been described in this table.

Table 2-10. List of Current Procedures and Practices for Quantifying Component Performance Against Human Threats

METHOD	DESCRIPTION OF THE METHOD	PROS	CONS
Estimate – Level 1	Estimates based on judgment or the determination of individuals, i.e., Director of Security, Chief Information Officer or other individual who has specific knowledge about component/ system vulnerabilities.	Can be an inexpensive and quick approach because the individual performing the assessment relies only on personal expertise and knowledge.	This approach is limited by the individual's prior knowledge of the component/system vulnerabilities. Individuals with knowledge about one type of component/system may not be aware of other types.
Expert Opinion – Level 1	Opinions based on the judgment of informed individuals, i.e., law enforcement, military intelligence officers or other individuals who can be considered experts by virtue of their knowledge of prior events on specific components/ systems and are knowledgeable about network architecture, system components, barrier systems, access-control systems, SCADA, computer security systems, business procedures/databases and communication systems.	Can provide confidence in the evaluation of vulnerability of components or systems. Confidence comes from the thorough identification of all critical system components and their various vulnerabilities. This method can be accurate enough to base specific mitigation measures on.	This method is generally more expensive and time consuming than a potentially readily available estimating method. This method may be moderately time consuming to survey each site and conduct interviews of staff that operate the components/ systems. This method provides a qualitative rather than a quantitative estimate. As a result, the estimate is generally not very precise.
Conduct Penetration Tests – Level 2/3	Active scanning and penetration tools are used to identify vulnerabilities. Often involves the establishment of rules of engagement, a white cell for continuous communication with the utility and an undercover red cell that performs the reconnaissance, scenario development and exploitation.	Provides a quantitative evaluation of a facility or computer system's vulnerability. The evaluation includes the amount of effort required to exploit the vulnerability and perform the penetration. Penetration tests can be conducted on a regular basis to determine the effectiveness of mitigation measures.	Generally limited to a particular set of components/systems within the utility to avoid disruption of normal services provided by the utility. If a large number of facilities or computer systems are tested, this method can be expensive and very time consuming.
Simulation – Level 3	Possible failure or disruption modes are simulated using commercially available software (Ponist, 2003; SNL, 2002) or internal tools or methodologies.	Sophisticated software tools can provide the most robust estimates of impacts. In general, very useful in developing "what-if" scenarios for planning.	Effort can be significantly greater and may require the use of software with significant data needs or requirements. May require special training in order to implement in-house.

2.6 System Performance Assessment

Methods for quantifying the performance of electric power systems are based on systems analysis techniques that can range from graphical methods to sophisticated simulation models. An important factor in deciding the right method is understanding how the results of the analysis will be used. For this reason, two additional parameters in defining methods for system performance assessment are helpful: desired outcome and key performance measures. By including these two additional factors, it will become clearer which analyses are most appropriate for your investigation.

2.6.1 System Outcomes and Performance Measures

In this Commentary, several different measures are used to assess system performance. To make their use more meaningful, we present these measures within the context of what desired outcomes are being sought. The measures and desired outcomes that are currently considered in the Guideline are:

Performance Target	Key System Performance Measures
▪ Protecting the Public and Personnel Safety	Casualties (deaths and injuries) and Hazardous Materials Spillage
▪ Maintain System Reliability	Service Disruption (% Service Population) and Downtime
▪ Preventing Monetary Loss	Capital Losses ($), Revenue Losses ($), Service Disruption, and Downtime
▪ Preventing Environmental Damage	Hazardous Materials Spillage

2.6.2 General Description of Methods

Three methods of measuring system performance are presented below:

- **Graphic** methods allow easy fusing of hazard and system information. Usually, these methods are implemented using some type of Geographic Information System (GIS) or tool. By overlaying hazard maps (e.g., location of liquefiable areas; flood hazard zones; or extreme wind areas) onto system maps, a user can make a quick and simple assessment of whether his or her system is exposed to a significant hazard.
- **Localized** methods can account for some local and/or detailed information on the system based on statistical methods or procedures. Usually applied to small systems or to systems that are dependent on a single component or node. An example might be a small distribution system that has no power generation or transmission. Very applicable to estimating direct mean capital losses; not so useful for measuring system effects, e.g., impacts from system disruption.
- **Simulation** methods are especially adaptable for measuring system impacts or effects. Usually requires a detailed characterization of the system by a computer

network model, including detailed information on the performance of individual elements and detailed mapping of hazards for large regions. More applicable to highly netted transmission or distribution systems. This method can be limited using specific scenarios of interest or fully probabilistic (i.e., accounting for all quantifiable uncertainties, including the occurrence of the hazard), that is, one scenario can be analyzed or multiple scenarios can be investigated.

2.6.3 Assessing System Performance

Table 2-11 describes the pros/cons and applicability of various methods of quantifying system performance. These methods are described in relation to the desired outcomes that are being sought. Citations are provided as a resource for understanding in detail the methodology being presented.

Table 2-11. List of Current Procedures and Practices for Quantifying System Performance

DESIRED OUTCOME	KEY PERFORMANCE MEASURE(S)	PROCEDURES AND PRACTICES	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
Prevent Monetary Loss	**Capital Losses ($)** **Revenue Losses ($)** **Service Disruption (% service population)** **Downtime (hours)**	**Graphic – Level 1**	Simple screening method or scoping study approach; can provide helpful visual displays for decision makers.	Cannot provide reliable (neither accurate nor precise) measure of dollars saved.	For scoping a study, convincing top-level management to undertake a detailed study, or providing illustrations of results of a more detailed evaluation.	Ostrom and Gould, (1986).
		Localized using Mean Estimates - Level 2	Provides an approach that is more reliable relative to a mean estimate. Considers specific conditions at site, e.g., design or construction details.	Does not provide an account of volatility (i.e. capital risks) of investments in natural hazards. Requires more effort to apply.	When the primary concern is with an estimate of average losses; or when the critical facilities, the system as a whole, or the hazard in question is fairly localized	Matsuda et al. (1991).
		Simulation – Limited or Full Probabilistic Analysis – Level 3	The probabilistic method provides full account of uncertainties and variability, including an account of volatility. The limited method permits quality assurance with respect to detail. Both the limited and full methods permit losses to be evaluated at a system level.	Effort is somewhat greater than localized methods. Limited simulations cannot provide robust statistics.	When it is desirable to develop a distribution of losses or view losses for system as a whole.	Limited: Shinozuka and Hwang (1998); Ostrom et al., (1992); Matsuda et al. (1991); Rose (1999); Chang et al. (1995). Full: Moghdaderi-Zadeh (1992), McGuire (1990), Taylor et al. (2001), Perkins and Taylor (2003).
Maintain System Reliability	**Service Disruption (% service population)** **Downtime (hours)**	**Graphic – Level 1**	Simple screening method or scoping study approach and can provide helpful visual displays for decision makers. Easily understood by operations and maintenance personnel.	Cannot provide reliable (neither accurate nor precise) measure of % customers without service. Does not consider the network features of a system.	For scoping a study, convincing top-level management to undertake a detailed study, or providing illustrations of results of a more detailed evaluation	

Table 2-11. List of Current Procedures and Practices for Quantifying System Performance (Continued)

DESIRED OUTCOME	KEY PERFORMANCE MEASURE(S)	PROCEDURES AND PRACTICES	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
		Localized using Mean Estimates – Level 2	Provides rough levels (ranges) of customer outages. Considers specifics of components at each site. Can be shared with public safety agencies.	Cannot provide precise estimates of % of customer outages. Can only provide macro information on outages originating in the distribution system. Requires more effort to apply.	When the primary concern is with an estimate of average outages; or when the critical facilities, the system as a whole, customer service areas, or the hazard in question can be treated as being fairly localized.	Matsuda et al. (1991).
		Simulation – Limited or Full Probabilistic Analysis – Level 3	The full probabilistic method provides an analysis of outage areas based on network connectivity, projected failure modes, and simulation of many events. The limited method permits quality assurance with respect to detail.	Effort is significantly greater than localized methods. Limited simulations cannot provide robust statistics.	When it is desirable to develop a distribution of percent customers without service or to produce outage area maps.	Limited: Shinozuka and Hwang (1998); Ostrom et al. (1992) ; (1990) ; Matsuda et al. (1991) ; Rose (1999) ; Chang et al. (1995). Full: Moghdaderi-Zadeh (1992); McGuire (1990); Taylor et al. (2001); Perkins and Taylor (2003).
Protecting Public and Personnel Safety	**Casualties (deaths, injuries)** **Hazardous Materials Spillage**	**Graphic – Level 1**	Simple screening method or scoping study approach and can provide helpful visual displays for decision makers. Easily understood by public safety agencies.	Cannot provide reliable (neither accurate nor precise) measure of expected number of casualties either in the public sector or within company facilities, or impact of hazardous materials releases.	For scoping a study, convincing top-level management to undertake a detailed study, or providing illustrations of results of a more detailed evaluation.	
		Localized using Mean Estimates – Level 2	Provides rough mean estimates of casualties. Considers specifics of components at each site. Can provide general assessment of impact of hazardous materials release.	Cannot provide precise estimates of casualties. Requires more effort to apply.	When the primary concern is with an estimate of average casualties; or when the critical facilities, the exposures are, or the hazard in question is fairly localized.	Matsuda et al. (1991); Seligson et al. (1996).

Table 2-11. List of Current Procedures and Practices for Quantifying System Performance (Continued)

DESIRED OUTCOME	KEY PERFORMANCE MEASURE(S)	PROCEDURES AND PRACTICES	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
		Simulation – Limited or Full Probabilistic Analysis – Level 3	The full probabilistic method provides a full account of uncertainties. The limited method permits quality assurance with respect to detail. Both the limited and full methods permit a broader range of hazard intensity.	Casualty estimation is crude to date. Estimates based on simulation analysis will be approximate due to the many factors that influence life safety concerns.	When it is desirable to develop a distribution of casualties.	Limited: Shinozuka and Hwang (1998); Ostrom et al. (1992), (1990) ; Matsuda et al. (1991) ; Rose (1999) ; Chang et al. (1995). Full: Moghdaderi-Zadeh (1992), McGuire (1990), Taylor et al. (2001), Perkins and Taylor (2003).
Prevent Environmental Damage	**Hazardous Materials Spillage**	**Graphic – Level 1**	Simple screening method or scoping study approach and can provide helpful visual displays for decision makers. Easily understood by operations personnel.	Cannot provide reliable (neither accurate nor precise) measure of extent of hazardous materials release.	For scoping a study, convincing top-level management to undertake a detailed study, or providing illustrations of results of a more detailed evaluation.	
		Localized using Mean Estimates – Level 2	Provides rough delineation of affected areas. For liquids, could be used to estimate mean clean-up costs; For gases, could be used to identify mean influence areas based on hazardous material and wind speeds.	Cannot provide precise estimates of damage, or the uncertainty associated with mean estimates. Requires more effort to apply.	When the primary concern is with an estimate of average impacts; or when the critical facilities, the exposures are, or the hazard in question is fairly localized.	

Table 2-11. List of Current Procedures and Practices for Quantifying System Performance (Continued)

DESIRED OUTCOME	KEY PERFORMANCE MEASURE(S)	PROCEDURES AND PRACTICES	PROS	CONS	WHEN APPLICABLE	RESOURCE DOCUMENTS DESCRIBING METHODOLOGY
		Simulation – Limited or Full Probabilistic Analysis – Level 3	The full probabilistic method provides a full account of uncertainty. The limited method permits quality assurance with respect to detail. Both methods provide a more reasonable assessment of risks due to hazardous materials release.	Effort is significantly greater than localized methods. Limited simulations cannot provide robust statistics.	When it is desirable to develop a distribution of impacts or consequences.	

3.0 Hazard Level Criteria

The Guideline uses national hazard map data to help screen out sites or areas that are obviously not affected by certain hazards. The Guideline provides a summary of the criteria that were used to judge whether areas were in low, medium or high hazard zones. The definitions and assumptions used to create the criteria are presented below. In addition, detailed tables showing these hazard levels by state and by county are contained in the appendix to this Commentary. These tables are ordered alphabetically by state and by county to make their use easy and practical.

The user should also note that hazard maps at other scales (geographic and risk-wise) can be used with this Guideline. For example, the U.S. Geological Survey provides probabilistic ground motion maps for 2, 5, and 10 percent probabilities of exceedance in 50 years. Naturally, the ground motion values on these maps increase with decreasing probability of exceedance. Electric power utilities may elect to base Phase 1 screening or the determination of analysis levels on different probabilities of exceedance. The methodology provided in the Guideline should accommodate the various maps with their associated probabilities of exceedance, but due consideration should be given to the choice of appropriate separation points for low, medium and high hazard levels.

Earthquake Hazard: The definition of earthquake hazard severity is based on the same criteria used in FEMA 154 (FEMA 2002b). FEMA 154 defines hazard levels with respect to two ground motion parameters specified by the U.S. Geological Survey, i.e., the design 5%-damped elastic spectral acceleration for a single-degree-of-freedom system with a period of 0.2 sec, and a similar measure for single-degree-of-freedom system with a period of 1.0 sec. For this Guideline, these parameters have been transformed into peak ground acceleration (PGA). The hazard severity assignments for this Guideline are based on the following criteria:

High: PGA > 0.5 g
Medium: 0.15 g ≤ PGA ≤ 0.5 g
Low: PGA less than 0.15 g

Earthquake hazard level. For earthquake, the Guideline uses the same hazard levels adopted by the authors of FEMA-154 (FEMA, 2002b; ATC, 2002), see Figure 3-1. This is a well-accepted, standard document for screening building for potential seismic risk. It defines hazard levels with respect to two ground motion parameters specified in the IBC 2003, which in turn references maps published by NEHRP (National Earthquake Hazards Reduction Program) and the U.S. Geological Survey (USGS, 1996a, 1996b, 1997b; Building Seismic Safety Council, 2001; and Frankel et al., 2000). The ground motion parameters are the design 5%-damped elastic spectral acceleration for a single-degree-of-freedom system with a period of 0.2 sec, referred to as S_S, and a similar measure for single-degree-of-freedom system with a period of 1.0 sec, referred to as S_1. Both parameters are accelerations, and are measured in units of distance per unit time squared, or more conveniently, in multiples of gravity, or *g*. To simplify the application of these parameters for this Guideline, these parameters were transformed into peak ground acceleration by dividing them by 2.5. A site with high earthquake hazard is defined as one with a PGA > 0.5g. A site with moderate hazard is defined as one that has either a PGA ≥ 0.15g or a PGA ≤ 0.5g. A site with low hazard is defined as one that does not qualify as either medium or high hazard. These separation points are judged to be reasonable in representing ground motions high enough to cause severe damage to electric power facilities (high); moderate damage to facilities (medium) and little or no damage to facilities (low).

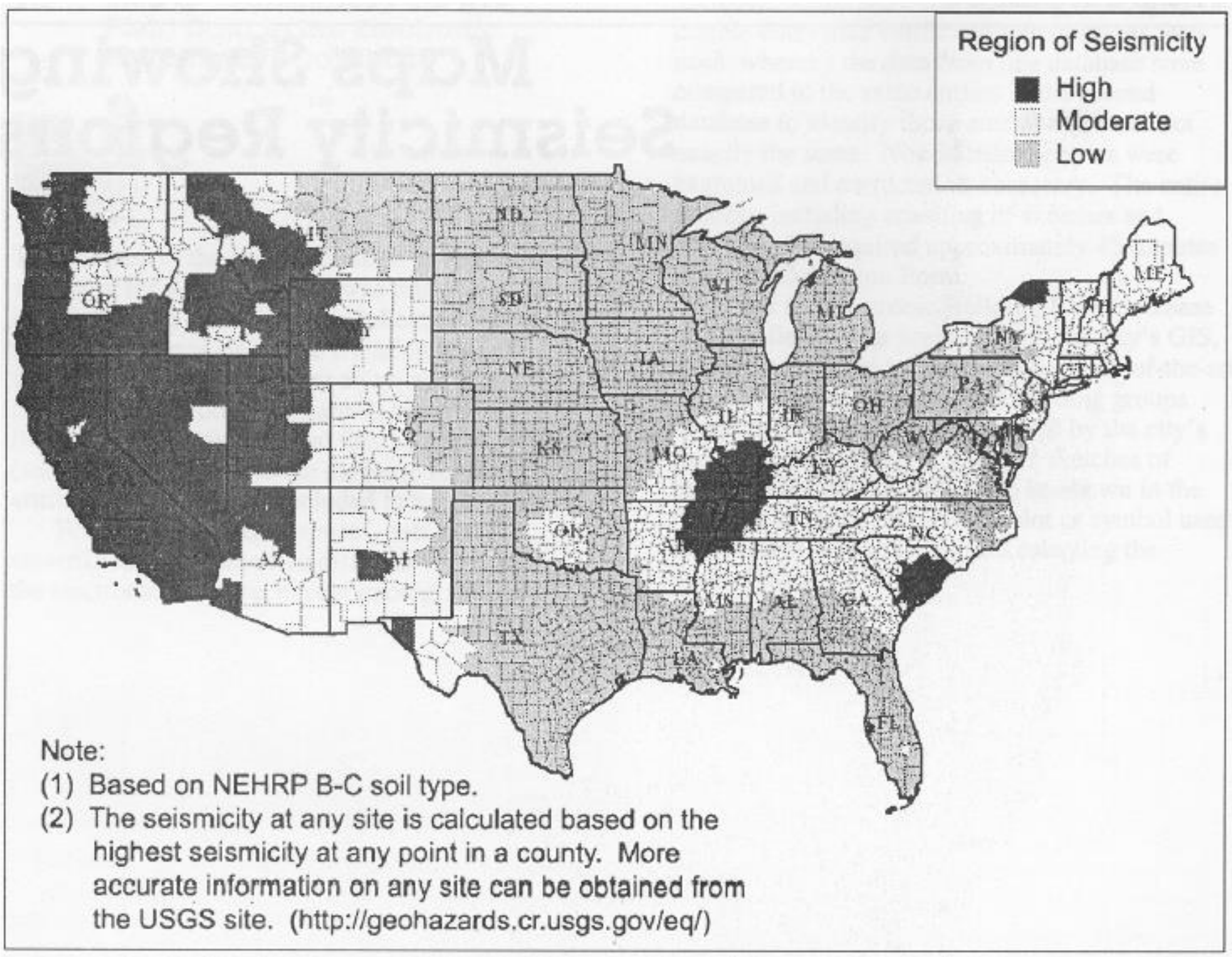

Figure 3-1. Seismic Hazard Map (FEMA, 2002b; ATC, 2002)

Landslide Hazard: The classification of landslide hazard severity is based on data from the national landslide overview map of the conterminous United States: USGS Open-File Report 97-289 (USGS, 1997a), see Figure 8-2. Landslide incidence categories in that map are defined according to the percentage of the area involved in landslide process (High: > 15% of area involved, Moderate: 1.5-15% of area involved, Low: < 1.5% of area involved). Susceptibility to landslide is defined as the probable degree of response of formations to natural or artificial cutting, loading of slopes, or to anomalously high precipitation. High, medium, and low susceptibility are delimited by the same percentages used for classifying the incidence level. The hazard severity definitions for landslide are defined as follows:

High: High incidence or high susceptibility/moderate incidence or high susceptibility/low incidence
Moderate: Moderate incidence or moderate susceptibility/low incidence
Low: Low incidence

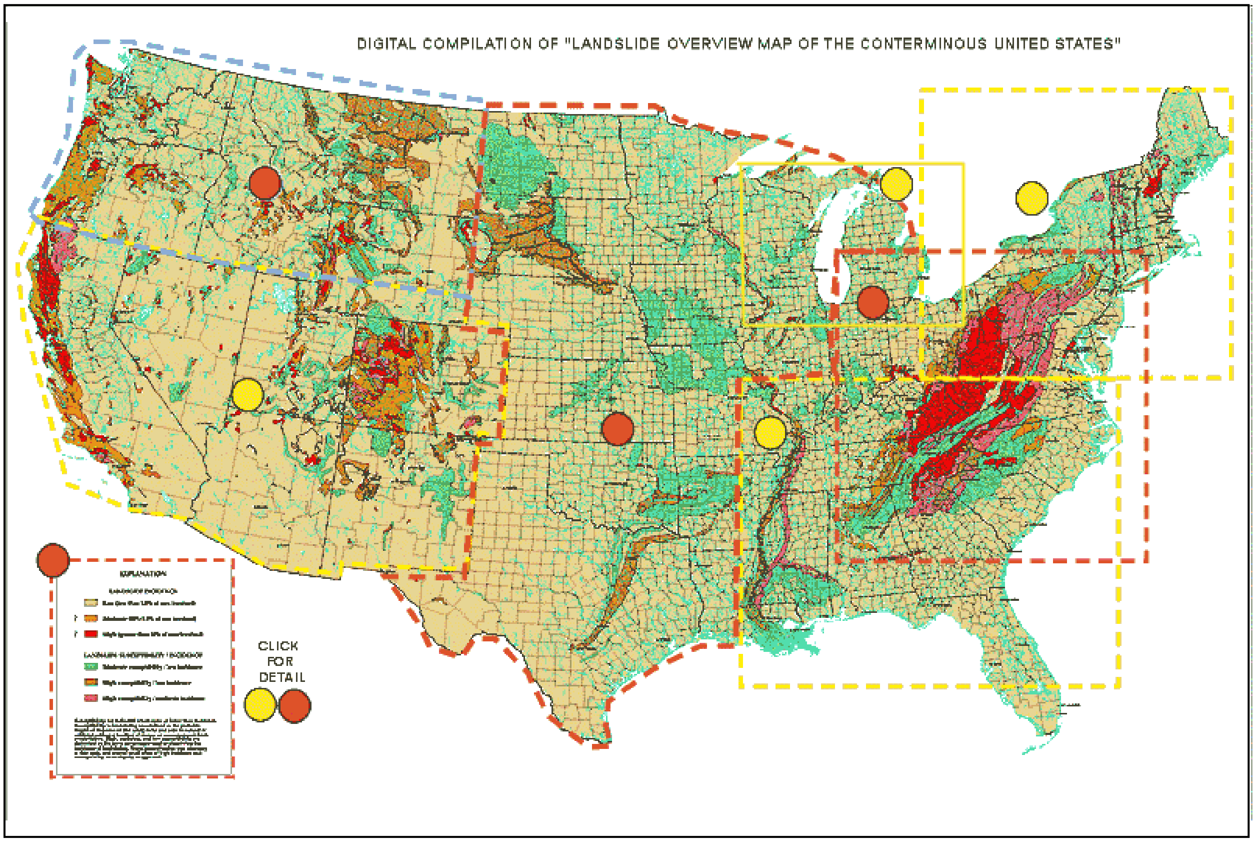

Figure 3-2. Landslide Map of the U.S. (USGS, 1997a – see following website for higher resolution images: http://landslides.usgs.gov/html_files/landslides/nationalmap/national.html)

Wind Hazard: The International Building Code (ICC, 2002) was used in defining wind hazard levels. The IBC provides a map from ASCE-7-02 (ASCE, 2003a), showing basic wind speeds for design. The following assignments were used to define wind hazard levels:

High: Wind speed ≥ 120 mph, or a Gulf/Atlantic county whose basic wind speed is 110 mph or greater, or in Hawaii.
Medium: Wind speed > 90 mph, but < 120 mph
Low: Not High or Medium

Tornado Hazard: Data from the National Oceanographic and Atmospheric Administration's (NOAA) Tornado Project database (NOAA, 1999) were used to define hazard levels for tornadoes only.

> ***High***: > 25 Tornadoes/10,000 sq.mi.
> ***Medium***: 5-25 Tornadoes/10,000 sq.mi.
> ***Low:*** < 5 Tornadoes/10,000 sq.mi.

Wind hazard level. In defining wind hazard levels, this Guideline relies on two sources: the IBC 2003 and data from the National Oceanographic and Atmospheric Administration's (NOAA) Storm Prediction Center. The IBC provides a map showing basic wind speeds for design. The map, taken from ASCE 7-02, is shown here in Figure 3-3. The IBC also provides two important definitions. It defines hurricane-prone regions as "The U.S. Atlantic Ocean and Gulf of Mexico coasts where the basic wind speed is greater than 90 mph and Hawaii, Puerto Rico, Guam, Virgin Islands, and American Samoa." It further defines wind-borne debris regions as "areas within hurricane-prone regions within 1 mile (1.6 km) of the coastal mean high water line where the basic wind speed is 110 mph (48.4 m/s) or greater; or where the basic wind speed is 120 mph (52.8 m/s) or greater; or Hawaii." For purposes of addressing tornado peril, the Guideline defines observed tornado occurrences as tornados (F0 and greater) that appear in the database compiled by the Tornado Project, as its database existed on July 1, 2003. The Tornado Project's database contains data taken from NOAA's (1999) Historical Tornado Data Archive. Figure 3-4 shows the rate of tornado occurrence by state; Figure 3-5 shows these statistics by county.

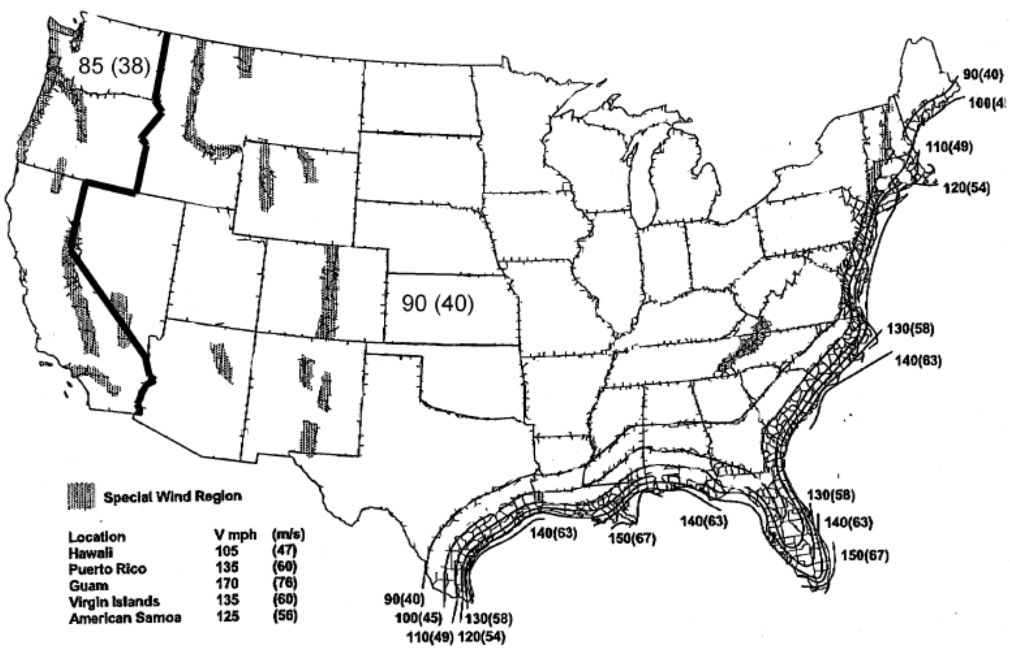

Figure 3-3. Basic Wind Speed Map (ASCE, 2003a)

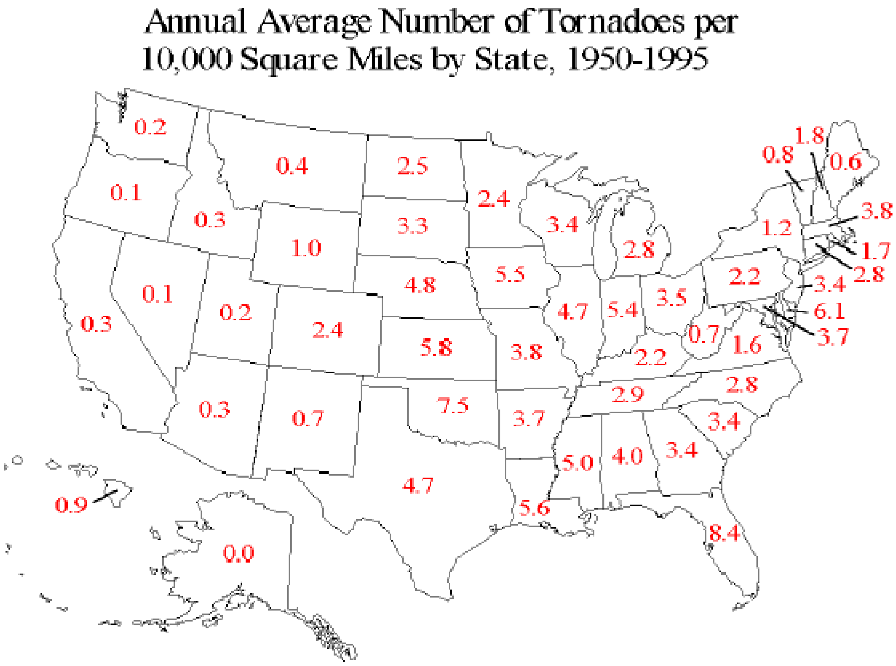

Figure 3-4. Annual Number of Tornadoes per 10,000 Square Miles, by State (NOAA, 1999)

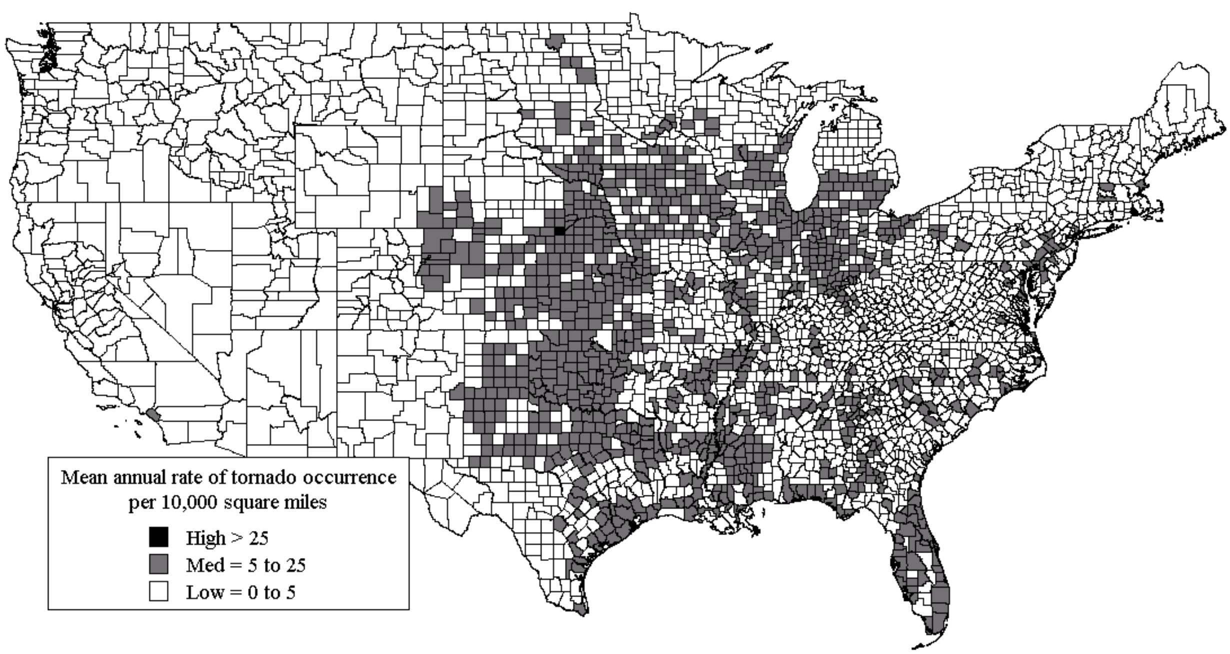

Figure 3-5. Average Annual Number of Observed Tornadoes per 10,000 Square Miles, by County

With these data in mind, the Guideline defines high wind hazard as being in a county where the maximum basic wind speed is 120 mph or greater, or in a county whose annual rate of observed tornado occurrence between 1950 and 1995 exceeds 25 per 10,000 square miles, or in a Gulf or

Atlantic coastal county whose basic wind speed is 110 mph or greater. Thus, the Guideline's definition of high hazard for wind is similar to the IBC's definition of wind-borne debris regions except that it is on a county basis, and includes tornado occurrence considerations. (Note that, while the Guideline uses NOAA data to determine the frequency of observed tornados, no obvious means has been found to equate tornado hazard with hurricane or straight-line wind hazard). The Guideline has therefore adopted what appears to be a reasonable method to acknowledge that tornado hazard contributes to overall wind hazard.

Medium wind hazard is defined as any county that does not qualify as high hazard, and whose basic wind speed exceeds 90 mph, or in a county whose annual rate of observed tornado occurrence between 1950 and 1995 exceeds 5 per 10,000 square miles. The Guideline's definition of medium hazard for wind is like the IBC's definition of hurricane-prone regions except that it is on a county basis, and includes tornado occurrence considerations.

Low wind hazard is defined as any county that does not qualify as either high or medium wind hazard. The Guideline does not address ASCE-7-02's special wind regions, since these require detailed site information that is beyond the scope of the Guideline.

Icing Hazard: In establishing the icing hazard, the Guideline uses ASCE 7-02, Minimum Design Loads for Buildings and Other Structures maps. These maps represent 50-year mean recurrence interval uniform ice thicknesses due to freezing rain. The following assignments were used to define icing hazard levels:

High: ≥ 1.0 in.

Medium: Greater than 0.25 in. and less than 1.0 in.

Low: ≤ 0.25 in.

*Ice Hazard Level***.** In establishing the hazard level for ice loads, the Guideline uses information contained in ASCE-7-02. Maps contained in ASCE-7-02 show 50-Year recurrence interval uniform ice thicknesses due to freezing rain with concurrent 3-second gust speeds. Ice thicknesses are shown in inches. ASCE-7-02 also indicates that freezing rain is unlikely to occur in some mountainous regions above 5,000 feet. Figures 3-6 and 3-7 show ice maps for the contiguous U.S. and in more detail, for the Pacific Northwest and Lake Superior. Based on these maps, the Guideline assumes high hazard areas correspond to those regions with ice thicknesses in excess of 1.0 in. In general, these areas include the Northeast, the Lake Superior region, and some parts of the Pacific Northwest. Medium hazard areas are those regions expected to experience between 0.25 in. and 1.0 in. of ice. Low hazard areas are all areas not considered high or medium.

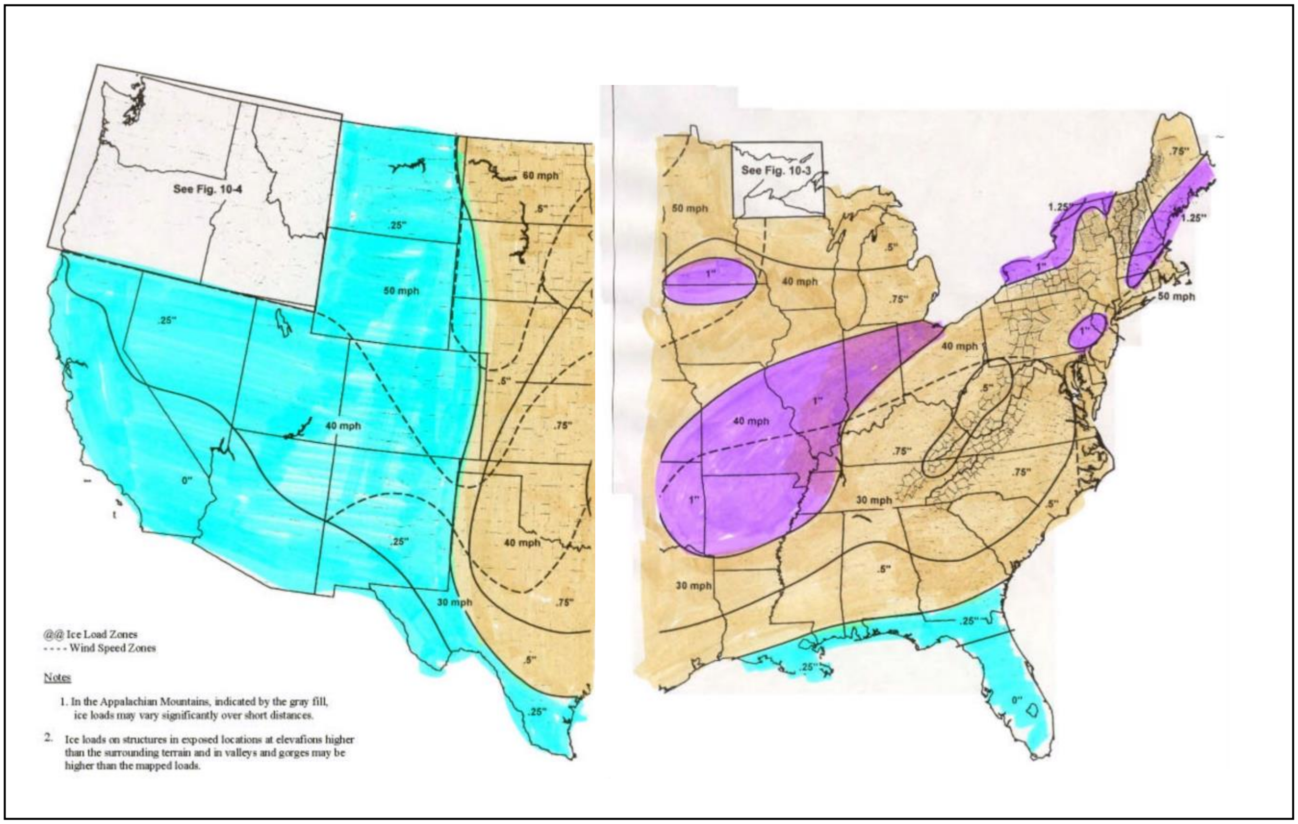

Figure 3-6. 50-Year Recurrence Interval Uniform Ice Thicknesses – Contiguous U.S. (ASCE-7-02, 2003a)

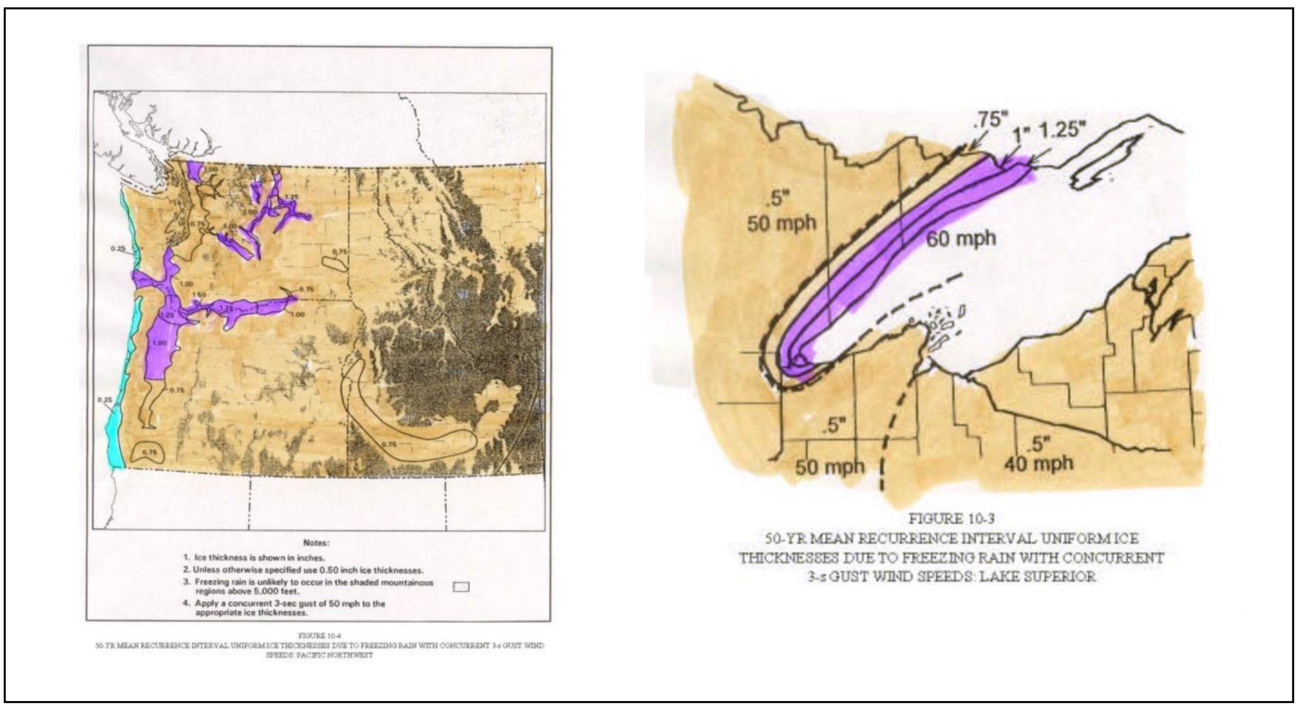

Figure 3-7. 50-Year Recurrence Interval Uniform Ice Thicknesses – Pacific Northwest and Lake Superior (ASCE-7-02, 2003a)

Flooding Hazard: The classification of counties for flood hazards is based on whether Q3 data are available for that county. Q3 data are GIS files that contain information on flood areas as mapped by the FEMA Flood Insurance Rate Maps (FIRM). The Q3 maps cover 1,332 counties out of 3,141. "Q3" in Appendix A indicates Q3 data are available for the county, and "NOQ3" indicates that Q3 are not available. The Q3 maps were produced to support disaster recovery operations, and are not officially recognized as a substitute for determining flood hazard from paper FIRM maps, largely due to map registration issues. Because the Q3 data are used in disaster recovery, counties with Q3 mapped generally correspond to areas with greater flood risk (see "Q3 Flood Data User's Guide" FEMA, 1996; http://msc.fema.gov/q3users.shtml).

The assumption used in this Guideline is that if data are available, then there is at least a 100-year flood plain mapped somewhere in that county. In this case, no distinction is made between low, medium or high hazard. If a Q3 map is available for that county, it was assumed that there is at least a medium flood hazard level for that area. The user should be aware, however, that lack of a Q3 map does not imply the non-existence of a flood hazard. If a "local" flood hazard is known to exist for the area under investigation despite the absence of a Q3 map, then the assessment should be upgraded to a Phase 2 evaluation. Therefore, the following assignments are used in gauging flood hazard levels:

Medium/High: Q3 map available for county

Low: Q3 map does not exist for county

Human Threats: The time-dependent nature of human threat levels has been considered in developing the criteria for hazard or threat level. In particular, the hazard criteria is based on ES-ISAC Orange (High) and Red (Severe) threat alert levels. With these separation points, the high hazard level is based on the existence of specific, credible information about a human threat against the electric industry. The moderate hazard level is based on Blue (Guarded) and Yellow (Elevated) threat alert levels. This selection is based on nonspecific, general information about the potential for a human-caused disruption of service. The low hazard level is based on the ES-ISAC Green (Low) threat alert level. This level is based on the existence of no known threats to the power industry other than normal human activities, which are generally tracked through reporting systems established by State Public Utilities Commissions.

High: ES-ISAC-Orange (High) to Red (Severe)

Medium: ES-ISAC-Blue (Guarded) to Yellow (Elevated)

Low: ES-ISAC-Green (Low)

Human Threat Level. Human threats by their very nature evolve from adversaries or events that can disrupt electric power systems. This evolutionary process occurs over time. Law enforcement analyst or security specialists rely on information or data obtained from research or interviews gathered over time to form an opinion about general or specific threats. This information or data are referred to as intelligence and comes from such diverse sources as criminals, business competitors, hackers, foreign intelligence services, terrorists and others.[1] Intelligence may come from open (published information or information from various news media) sources. In general, intelligence is treated as confidential information to avoid discovery by adversaries in an attempt to apprehend them before they have the chance to launch attacks. Intelligence is generally shared only on a need-to-know basis. As such, the quantity and quality of specific intelligence about a human threat (or conversely the lack of specific information about the potential for human threats) is not very useful for determining the appropriate level of investigation.

When short-term periods of intense politically motivated protests take place, however, the infrastructure community can expect that it may be attacked, regardless of its involvement in the event being protested. Protesters often view regulated utility companies, such as electric power companies, as part of the government, regardless of whether they are an investor owned or a publicly owned utility. Even protests between two foreign nations can spill over into the United States, because the United States is a multicultural nation with a large global presence.[2]

As a result of the national aspect of human threats, the Federal government has long been involved in developing intelligence through multiple law enforcement and intelligence agencies and coordinating that information dissemination with State and local government agencies. Following the President's Commission on Critical Infrastructure Protection in 1997 and the President's Decision Directive 63 in 1998, the Secretary of the U.S. Department of Energy requested the North American Electric Reliability Council (NERC) to accept the role as Electric Sector Coordinator for Critical Infrastructure Protection. NERC established voluntary procedures for implementing information reporting, analysis and warning provisions of the National Infrastructure Protection Center's (NIPC) national level Indications, Analysis & Warning (IAW) program. Within the IAW program, NERC developed the Electric Sector – Information Sharing and Analysis Center (ES-ISAC).[3]

It is the mission of ES-ISAC to receive information for analysis by governmental agencies, provide analytical support to the NIPC and other agencies in the interpretation of information about the Electric Sector, and disseminate threat indications, analyses, and warnings together with interpretations to assist the Electric Sector. As part of this mission, the NERC sponsored ES-ISAC has developed color coded Threat Alert Levels in a similar fashion to the Department of Homeland Security Threat Alert Levels of Green (Low), Blue (Guarded), Yellow (Elevated), Orange (High) and Red (Severe). The threat levels are divided into physical and cyber threat alert levels. Physical threat alert levels can be issued for the entire nation, a specific region, city,

---

[1] National Infrastructure Protection Center, "Risk Management: An Essential Guide to Protecting Critical Assets," November 2002.

[2] NIPC Same as above.

[3] Leffler, Louis G., "Testimony to the United States House of Representatives, Committee on Government Reform, Subcommittee on Government Efficiency, Financial Management and intergovernmental Relations, discussing Activities Undertaken by the Electricity Sector to Address Physical and Cyber Security with Emphasis on the Electricity Sector – Information Sharing and Analysis Center," July 24, 2002.

and facility type[4]. Cyber threat alert levels can be issued for a specific computer platform or a communications protocol or service, such as "Windows 2000" or "SCADA Communications."[5] Current definitions of human threats are provided in Table 3-1.

The temporal dependent nature of human threats has been considered in the definition of human threat levels. The high hazard level is based on ES-ISAC Orange (High) and Red (Severe) threat alert levels. The high hazard level is based on the existence of specific, credible information about a human threat against electric power companies. The medium hazard level is based on Blue (Guarded) and Yellow (Elevated) threat alert levels. This selection is based on nonspecific, general information about the potential for a human-caused disruption of system function. Since the ES-ISAC threat alert levels were developed after the September 11, 2001 terrorist attack on the World Trade Center, the threat alert levels have not fallen below Yellow (Elevated) or above Orange (High), which seems appropriate for the evaluations of the performance of utility systems that have been conducted with respect to human threat events since that time. The low hazard level is based on the ES-ISAC Green (Low) threat alert level, which implies a general absence of threats against electric power companies other than normal human activities, which are generally tracked through reporting systems established by the various State Public Utilities Commissions.

[4] NERC, "Threat Alert System and Physical Response Guidelines for the Electricity Sector," Version 2.0, October 8, 2002.
[5] NERC, "Threat Alert System and Cyber Response Guidelines for the Electricity Sector," Version 2.0, October 8, 2002.

Table 3-1. Human Threat Definitions

Physical	Cyber
ES-Physical-Green (Low): ES-Physical GREEN Applies when no known threat exists of terrorist activity or only a general concern exists about criminal activity, such as vandalism, which warrants only routine security procedures. Any security measures applied should be maintainable indefinitely and without adverse impact to facility operations. This level is equivalent to normal daily operations.	**ES-Cyber-GREEN (Low):** ES-Cyber-GREEN condition applies when there is no known threat of cyber attack or only a general concern about hacker activity that warrants only routine security procedures. Any cyber security measures applied should be maintainable indefinitely and without adverse impact to business or expenses. This may be equivalent to normal daily conditions.
ES-Physical-Blue (Guarded) ES-Physical BLUE Applies when a general threat exists of terrorist or increased criminal activity with no specific threat directed against the electric industry. Additional security measures are recommended, and they should be maintainable for an indefinite period with minimum impact on normal facility operations.	**ES-Cyber-BLUE (Guarded)** ES-Cyber-BLUE condition applies when there is a general threat of increased cyber (hacker intrusions, viruses, etc.) activity with no specific threat directed toward the electric industry. Additional cyber security measures may be necessary, and if initiated they should be maintainable for an indefinite period with minimum impact on normal business or expenses.
ES-Physical-Yellow (Elevated): ES-Physical YELLOW Applies when a general threat exists of terrorist or criminal activity directed against the electric industry. Implementation of additional security measures is expected. Such measures are anticipated to last for an indefinite period.	**ES-Cyber-YELLOW (Elevated):** ES-Cyber-YELLOW condition applies when a general threat exists of disruptive cyber activity is directed against the electric industry. Implementation of additional cyber security measures is expected. Such measures are anticipated to last for an indefinite period.
ES-Physical-Orange (High): ES-Physical ORANGE Applies when a credible threat exists of terrorist or criminal activity directed against the electric industry. Additional security measures have been implemented. Such measures may be anticipated to last for a defined period.	**ES-Cyber-ORANGE (High):** ES-Cyber-ORANGE condition applies when a credible threat exists of disruptive cyber activity directed against the electric industry. Additional cyber security measures have been implemented. Business entities need to be aware that corporate resources will be required above and beyond those required for normal business or expenses.
ES-Physical-Red (Severe): ES-Physical-RED Applies when an incident occurs or credible intelligence information is received by the electric industry indicating a terrorist or criminal act against the electric industry is imminent or has occurred. This condition may apply because of an incident in North America outside of the Electricity Sector. Maximum security measures are necessary. Implementation of such measures could cause hardship on personnel and seriously impact facility business and security activities.	**ES-Cyber-RED (Severe)** ES-Cyber-RED Condition applies when an incident occurs or credible intelligence information is received by the electric industry indicating a disruptive cyber attack against the electric industry is imminent or has occurred. This condition may apply because of an incident in North America outside of the Electricity Sector. Maximum cyber security measures are necessary. Implementation of such measures could cause hardship on personnel and seriously impact facility business and security activities.

4.0 Annotated References

ALA (American Lifelines Alliance), 2002a, Development of Guidelines to Define Natural Hazards Performance Objectives for Water Systems, v.1, September, www.americanlifelinesalliance.org

This document provides detailed guidelines for evaluating water systems subjected to natural hazard threats.

ALA (American Lifelines Alliance), 2002b, Development of Guidelines to Define Natural Hazards Performance Objectives for Water Systems, v.2, September, www.americanalliance.org

This document provides a detailed commentary to the aforementioned Volume 1 report.

ASCE (American Society of Civil Engineers), 2003a, "Minimum Design Loads for Buildings and Other Structures," ASCE 7-02, Structural Engineering Institute.

This ASCE standard specifies dead, live, flood, wind, snow, rain, seismic, and ice loads for structures.

ASCE (American Society of Civil Engineers), 2003b, "Seismic Evaluation of Existing Buildings," ASCE/SEI 31-03, an ASCE Standard.

This ASCE standard provides detailed procedures for the evaluation of existing buildings and building equipment, replacing FEMA 310.

ATC (Applied Technology Council), 2002, "Rapid Visual Screening of Buildings for Potential Seismic Hazards – A Handbook," Second Edition, FEMA 154, Washington, D.C.

The report contains guidelines for performing rapid safety inspections of buildings after large earthquakes.

Building Seismic Safety Council, 2001, *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures,* 2000 Edition, FEMA 368, Federal Emergency Management Agency, Washington, D.C., pp. 374.

Seismic provisions in this document used as a basis for seismic provisions in 2000 International Building Code and ASCE 7-98 Standard.

Chang, S.E., H.A. Seligson, and R.T. Eguchi, 1995, "Estimation of Economic Losses Caused by Disruption of Lifeline Service," pp. 48-55 in *Lifeline Earthquake Engineering: Proceedings of the Fourth U.S. Conference,* ed. by M. J. O'Rourke, New York: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 6.

This paper provides a scenario-based evaluation of regional losses to Memphis Gas and Light.

Cornell, A., 1968, “Engineering Seismic Risk Analysis,” *Bulletin of the Seismological Society of America*, v. 68, no. 1, pp. 1583-1606.

This paper is one of the pioneering works in earthquake risk analysis. Its applications are primarily to site-specific cases such as buildings or individual components in a system.

EPRI, (Electric Power Research Institute), 2002, Security Vulnerability Self-Assessment Guidelines for the Electric Power Industry, EPRI, December .

Guidelines for assessing power system vulnerabilities, especially from human threats.

FEMA, (Federal Emergency Management Agency), 1994, “Reducing the Risk of Nonstructural Earthquake Damage – A Practical Guide,” FEMA 74, September.

This guide presents examples of nonstructural earthquake damage, mitigation techniques, and their costs. The costs are somewhat outdated.

FEMA, (Federal Emergency Management Agency), 1996, "Q3 Flood Data User's Guide," http://msc.fema.gov/q3users.shtml.

Documents the use of flood hazard maps published by the Federal Emergency Management Agency.

FEMA (Federal Emergency Management Agency), 2000, “Pre-standard and Commentary for the Seismic Rehabilitation of Buildings,” FEMA 356, November.

Report that describes guidelines for rehabilitating or retrofitting seismically-deficient buildings.

FEMA (Federal Emergency Management Agency), 1997, “Multihazard Identification and Risk Assessment: A Cornerstone of the Natioal Mitigation Stragegy.”

Milestone plan published by FEMA to address all natural hazards.

FEMA (Federal Emergency Management Agency), 2002a, Integrating Human-Caused Hazards into Mitigation Planning, FEMA 386-7, September.

General guidelines for considering actions for mitigating human threats.

FEMA (Federal Emergency Management Agency), 2002b, “Rapid Visual Screening of Buildings for Potential Seismic Hazards – A Handbook,” FEMA 154 / 155, Second Edition, Redwood City, CA.

Contains procedures for performing post-earthquake safety inspections. Currently, serves as a major tool in many state and local building and planning departments.

FEMA (Federal Emergency Management Agency), 2003a, *HAZUS MH Manual*. See also http://www.fema.gov/hazus/or www.hazus.org.

The report provides guidance to individuals implementing HAZUS multi-hazard (MH). Currently, earthquake, wind and flood are addressed.

FEMA (Federal Emergency Management Agency), 2003b, *Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings*, FEMA 426, June.

Guideline to identify potential human threats to buildings and possible mitigative actions.

Frankel, A.D., C.S. Mueller, T.P. Barnhard, E.V. Leyendecker, R.L. Wesson, S.C. Harmsen, F.W. Klein, D.M. Perkins, N.C. Dickman, S.L. Hanson, and M.G. Hopper, 2000, USGS National Seismic Hazard Maps, *Earthquake Spectra*, v.16, no. 1, pp. 1-19.

This paper provides further clarification and ongoing updates to the 1996 Frankel et al. seismic hazard maps and documentation.

ICBO (International Conference of Building Officials), 1997, *Uniform Building Code*, Whittier, CA.

Basic reference for building design and construction.

ICC (International Code Council), 2002, *International Building Code 2003*.

This code is based on the seismic provisions in the Building Seismic Safety Council (2001) – FEMA 368 publication. The preceding edition in 2000 replaced the 1997 Uniform Building Code.

IEEE, 1997, Recommended Practices for Seismic Design of Substations, IEEE 693.

This is an earthquake qualification standard for electric power components that is written by individuals representing the utility, testing and manufacturing industries and academia. The standard provides an earthquake qualification approach that the four stakeholder groups support.

Matsuda, E.N., W.U. Savage, K.K. Williams, and G.C. Laguens, 1991, "Earthquake Evaluation of a Substation Network," pp. 295-317, *Lifeline Earthquake Engineering: Proceedings of the Third U. S. Conference*, ed. Michael A. Cassaro, New York: American Society of Civil Engineers.

This paper provides a method for ranking substations in terms of the aggregate system effects of earthquake scenarios and in order to improve earthquake pre- and post-disaster activities.

McCalpin, J.P. (ed), 1996, *Paleoseismology*, Volume 62, International Geophysics Series, Academic Press, New York.

This book provides a summary of techniques and methods used in field studies to estimate the location, timing, and size of prehistoric earthquakes. All contributors to the book are active field researchers that have had a role in developing the techniques presented. The book relies on many case histories to illustrate the application of techniques that are currently accepted as routine as well as techniques that are evolving with the field of paleoseismology.

MCEER (Multidisciplinary Center for Earthquake Engineering Research), 1999, *Proceedings of the Seventh U.S.-Japan Workshop on Earthquake Resistant Design of Lifeline Facilities and Countermeasures Against Soil Liquefaction*, Editors: T. O'Rourke, J. Bardet, and M. Hamada, Buffalo, N.Y.

This workshop proceedings contains numerous papers that focus on the assessment of liquefaction hazards and their effects on distributed lifeline systems. This report is part of a series that started over 10 years ago.

McGavin, G.L., 1981, "Earthquake Protection of Essential Building Equipment," John Wiley & Sons.

This comprehensive guide discusses seismic qualification of building service equipment, and shows anchorage and bracing techniques for mitigation of earthquake damage. The codes and specifications cited are somewhat outdated.

McGuire, R. K., 1990, "Effects of Uncertainties in Component Fragilities on Lifelines Seismic Risk analysis," pp. 14-22, *Recent Lifeline Studies*, ed. by Anne S. Kiremidjian, New York: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 1.

This paper provides a procedure for a full seismic risk evaluation of lifeline networks. Contains the seeds of a "covariance matrix" procedure that has since been adapted in catastrophe insurance modeling as a means (with some loss of information) to reduce computer times for catastrophe insurance evaluations.

Moghdaderi-zadeh, M., 1992, "Earthquake Loss Analysis for Lifelines," pp. 661-672 in *Lifeline Earthquake Engineering: Proceedings of the Third U. S. Conference*, ed. Michael A. Cassaro, New York: American Society of Civil Engineers.

This paper provides a general outline of how to undertake a full simulation evaluation of a lifeline network.

National Infrastructure Protection Center, 2002, "Risk Management: An Essential Guide to Protecting Critical Assets."

Information developed for the electric power industry on responding to terrorist and other human threats.

National Research Council, 1985, *Liquefaction of Soils during Earthquakes*: National Academy Press, Washington, D.C.

This report summarizes the state-of-the-art in seismically induced liquefaction studies as of 1985.

NERC (North American Electric Reliability Council), 2002a, "Threat Alert System and Cyber Response Guidelines for the Electricty Sector," Version 2.0, October 8, 2002.

NERC (North American Electric Reliability Council), 2002b, "Threat Alert System and Physical Response Guidelines for the Electricty Sector," Version 2.0, October 8, 2002.

NOAA (National Oceanographic and Atmospheric Administration), 1999, *Tornado Data Archive.*

Tornado database for the U.S.

Nyman, D. J., D. G. Honegger, and P. C. Thenhaus, 2003. "Considerations for the Design of Buried Natural Gas and Liquid Hydrocarbon Pipeline Fault Crossings," Proceedings of the 6th U.S. Conference on Lifeline Earthquake Engineering (Advancing Mitigation Technologies and Disaster Response), Long Beach, CA, TCLEE, ASCE, pp. 744-756.

This paper presents a summary of state-of-the-art practice for the analysis and design of fault crossings for buried natural gas and liquid hydrocarbon pipeline systems. It covers the investigation of fault crossing hazards, presents a strain-based analysis and design methodology, and identifies key areas of uncertainty that affect determination of fault crossing design margins.

Ostrom, D.K., 2003, "SERA II," TCLEE Conference, Long Beach, CA, August.

This Paper describes the reevaluation of earthquake risk for a major electric utility system. The purpose of this paper was to address several key issues raised in an American Power Conference Paper "Seismic Risk Assessment for a Utility System." This paper presents the performance of a system risk assessment from the perspective of the utility.

Ostrom, D.K. and G.J. Gould, 1986, "Seismic Risk Assessment for a Utility System," pp. 88-92 in *Lifeline Seismic Risk Analysis—Case Studies*, ed. R.T. Eguchi, New York: American Society of Civil Engineers.

This early work by the principal author focuses on the monetary risks that earthquakes pose to electric utilities. The publication develops a simple relationship between the performance of electric system components at the facility level and earthquake hazard. The final assessment is presented in terms of monetary risk.

Ostrom, D.K., Burhenn, T.A., Hawkins, H.G., Richau, E.M., 1992, "The Earthquake Vulnerability of a Utility System," *Proceedings of the American Power Conference*, v. 54-1, pp. 224-227.

This paper presents a System Earthquake Risk Assessment (SERA) of an electric utility system. The paper discusses how to model the system, especially the return to service of the electric utility system. The approach is based on developing statistically compatible system states using Monte Carlo simulations on a component level. Component fragilities are based on performance data from past earthquakes.

Perkins, D. and C. Taylor, 2003, "Earthquake Occurrence Modeling for Evaluating Seismic Risks to Roadway Systems," *Advancing Mitigation Technologies and Disaster Response for Lifeline "Systems: Proceedings of the Sixth U. S. National Conference on Lifeline Earthquake Engineering,"* ed. by James E. Beavers, Reston, VA: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 25, pp. 859-867.

This paper provides potential efficiencies in modeling systems probabilistically relative to earthquake threats.

Ponist, R. 2003, "Transmission and Distribution – How to Assess Transmission Line Security," *WWW.ELP.COM*, August.

Article that introduces simulation software for assessing the reliability of electric power systems to human threats.

Power, M.S., and Holzer, T.L., 1996, Liquefaction Maps: Applied Technology Council, ATC TechBrief 1.

This technical brief presents a listing of maps of liquefaction for many urban areas throughout the U.S. and Puerto Rico.

Rose, A., 1999, "Computable General Equilibrium Modeling of Earthquakes," pp. 612-620 in *Optimizing Post-Earthquake Lifeline System Reliability: Proceedings of the Fifth U.S. Conference,* ed. William M. Elliott and Peter McDonough, Reston, VA: American Society of Civil Engineers, Technical Council on Lifeline Earthquake Engineering Monograph No. 16.

This paper provides an account of the general features of a method used to evaluate regional losses to lifelines systems as a result of earthquake disruption.

Sandia National Laboratory, 2002, Risk Assessment Methodology for Transmission (RAM-T), January.

Reference that discusses proprietary software to analyze the reliability of electric power systems from human threats.

Scawthorn, C., ed., 1986, "Techniques for Rapid Visual Assessment," ASCE.

This ASCE monograph presents a series of papers discussing rapid visual assessment techniques. It provides some good background to later developments such as FEMA 154 (2002).

Seligson, H.A., Eguchi, R.T., Tierney, K.J., and K. Richmond, 1996, *Chemical Hazards, Mitigation and Preparedness in Areas of High Seismic Risk: A Methodology for Estimating the Risk of Post-Earthquake Hazardous Materials Release*, Technical Report NCEER-96-0013, November 7, 1996.

This report provides a methodology for determining public exposure to hazardous materials release in an earthquake. The methodology is applied to the southern California area. Release of chlorine and ammonia are studied. Fragility models for chemical processing equipment are also included in this report.

Shinozuka, M. and H.H.M. Hwang, 1998, "Seismic Performance of Electric Power Systems," pp. 33-44 in *Engineering and Socioeconomic Impacts of Earthquakes*, Buffalo, N.Y.: Multidisciplinary Center for Earthquake Engineering Research, MCEER Monograph Number 2.

This paper provides a scenario-based method to the assessment of electric power system.

Synolakis, C., 2003, Tsunami and Seiche: *Earthquake Engineering Handbook,* Chapter 9, CRC Press.

This chapter discusses historical tsunamis and presents the theory for tsunami and seiche generation and inundation.

Taylor, C.E., S.D. Werner, and S. Jakubowski, 2001, "The Walkthrough Method for Catastrophe Decision-Making," *Natural Hazards Review*, November, also anthologized in *Vulnerability and Protection of Infrastructure Systems: The State of the Art,* American Society of Civil Engineers, 2002.

This paper provides a full Monte Carlo time-series approach to the evaluation of lifeline systems subjected to natural catastrophes. Advances on this paper are found in Perkins and Taylor (2003).

USGS (U.S. Geological Survey), 1996a, *National Seismic Hazard Maps, June 1996 Documentation,* Open-File Report 96-532, pp. 110.

This document provides documentation for the U. S. seismic probabilistic hazard maps that have been in effect until 2002.

USGS (U.S. Geological Survey), 1996b, *Probabilistic Seismic Hazard Assessment for the State of California,* California Geological Survey, Open-File Report 98-08, pp. 66 and the U.S. Geological Survey Open-File Report 96-706, pp. 66.

This report summarizes efforts at the California Geological Survey consistent with those produced by Frankel et al. (see 1996, 2002).

USGS (U.S. Geological Survey), 1997a, *National Landslide Map for the Conterminous United States*, Open-File Report 97-289.

Map showing the locations of significant landslide hazards for the U.S.

USGS (U.S. Geological Survey), 1997b, *National Seismic Hazard Maps*, Open-File Report 97-131.

Seismic hazard maps for the U.S. Uses different ground motion indices and return periods to define hazard level

USGS (U.S. Geological Survey), 1998, *A Method for Producing Digital Probabilistic Seismic Landslide Hazard Maps: An Example from the Los Angeles, California, Area,* Open File Report 98-113.

This report uses geologic and ground-motion data from the 1994 Northridge, California, earthquake to construct a general model of permanent ground displacement based on the Newmark sliding-block theory of coseismic displacement on slopes.

USGS (U.S. Geological Survey), 2002, *Documentation for the 2002 Update of the National Seismic Hazard Maps*, Denver, CO, Open-File Report 02-420.

This report documents the 2002 update to the 1996 national probabilistic seismic hazard maps produced by Frankel et al.

Wong, I. et al., 2002, "A Comprehensive Seismic Vulnerability and Loss Evaluation of the State of South Carolina Using HAZUS: Part I Overview and Results," *Proceedings of the 7th National Conference on Earthquake Engineering*, Boston.

This paper describes how this comprehensive study was conducted for the State of South Carolina, using HAZUS. It included both buildings and lifelines, and used detailed, customized ground motions, geology, exposure and vulnerability data, to greatly improve the accuracy of the results compared to default HAZUS databases.

Youngs, R.R., et al., 2003, A Methodology for Probabilistic Fault Displacement Hazard Analysis (PFDHA): *Earthquake Spectra*, v. 19, no. 1, pp. 191-219.

This paper provides method to conduct a site-specific probabilistic analysis of fault displacement hazard.

5.0 Acronym List

ALA	American Lifelines Alliance
ASCE	American Society of Civil Engineers
ATC	Applied Technology Council
BLM	Bureau of Land Management
CB	Circuit breaker
CIA	Central Intelligence Agency
CPT	Cone Penetration Tests
DHS	Department of Homeland Security
DOE	Department of Energy
DOT	Department of Transportation
DT	Dead Tank
FBI	Federal Bureau of Investigation
EPA	Environmental Protection Agency
FEA	Finite-Element Analysis
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLAC	Fast Lagrangian Analysis of Continua
GIS	Geographic Information Systems
HAZUS	Hazards U.S.
HEC RAS	Hydrologic Engineering Center, River Analysis System
IBC	International Building Code
LT	Live Tank
MCEER	Multidisciplinary Center for Earthquake Engineering Research
MMC	Multihazard Mitigation Council
NEHRP	National Earthquake Hazards Reduction Program
NIPC	National Infrastructure Protection Center
NOAA	National Oceanographic and Atmospheric Administration
NIBS	National Institute of Building Sciences
NRC	Nuclear Regulatory Commission
NWS	National Weather Service
PEER	Pacific Earthquake Engineering Research Center
PSHA	Probabilistic Seismic Hazard Analysis
PWHA	Probabilistic Wind Hazard Analysis
QT	Qualification testing
RFP	Request for Proposal
SERA	System Earthquake Risk Assessment
SCADA	Supervisory Control and Data Acquisition
SPT	Standard Penetration Tests
TR	Transformer
TSA	Transportation Security Administration
USGS	U.S. Geological Survey

6.0 Terms and Definitions

Acceleration. The rate of change of velocity. As applied to strong ground motions, the rate of change of earthquake shaking velocity of a reference point. Commonly expressed as a fraction or percentage of the acceleration due to gravity (g), wherein g = 980 cm/s^2.

Accuracies. There are two types of accuracy used in defining this Guideline, relative and absolute. Relative accuracy refers to precision relative to some baseline condition or among different parameters. That is, the relative accuracy of ground motion prediction is high compared to our ability to predict earthquakes. Absolute accuracy usually refers to some specific determination of how accurate a particular number is. For example, our estimate of ground motion is 0.5 g, plus or minus 0.1 g.

Active Fault. An earthquake fault that is considered to be likely to undergo renewed movement within a time period of concern to society. Faults are commonly considered to be active if they have moved one or more times in the last 10,000-11,000 years, but they may also be considered potentially active when assessing the hazard for some applications even if movement has occurred in the last 500,000 years. See **fault.**

Analysis Level 1. Level 1 is designed to provide a preliminary estimate of hazard, vulnerability or system performance. This analysis can usually be completed within a matter of days and, in most cases, can be completed by operations and engineering staff. The results are considered uncertain by a factor of 2 or 3 or more, and should be used to scope out the extent of the problem in order to decide whether more detailed studies are needed. If the results from this level of analysis do not meet the objectives of the inquiry, then a higher level of analysis should be used (Level 2).

Analysis Level 2. Level 2 is characterized as a more quantitative analysis, often depending on historical or statistical information to quantify hazard, vulnerability, and system performance, and on collecting data from the field. This level is typically completed within a matter of weeks rather than months or years, and could be performed by operations and engineering staff, with possible assistance from technical specialists. The accuracy of the results is better than approximate, often providing quantitative results within a factor of 2 or 3. If further detail or precision is required, then a Level 3 analysis is indicated.

Analysis Level 3. Level 3 represents the highest level of analysis that can be performed. It is quantitative with results accurate to the state-of-the-practice. This level is characterized by better and more complete data; the use of more advanced methodologies or tools (e.g., proprietary software), and will generally require the participation of technical specialists. Level 3 analyses often require extensive fieldwork and generally take months or even years to complete.

ASCE 7. Specifications for minimum design loads for buildings and other structures. Issued by the American Society of Civil Engineers.

Attenuation. The rate at which seismic, wind, or water intensities decrease with distance from their sources or shoreline landing points.

Blizzard. A combination of heavy snowfall, high winds, extreme cold, and ice storms. (FEMA, 1997)

Cells. As used in this Guideline, cells refer to groups or organizations that participate in 'war gaming' or simulations. A red cell is the group that is being tested or responding to incidents; a white cell is the facilitating group, i.e., providing information and facilitating communication.

Coastal Erosion. A hydrologic hazard defined as the wearing away of land and loss of beach, shoreline, or dune material as a result of natural coastal processes or manmade influences. (FEMA, 1997) A hydrologic hazard defined as the eroding of land and loss of beach or shoreline as a result of natural processes or manmade influences. (9/19/01 by LeVal Lund)

Component Damage Algorithm or Model. A procedure or function for estimating damage to a component subjected to a natural hazard event.

Component Downtime Model. A component vulnerability model or function relating the degree of downtime for the component as a function of its damage state. Can be combined with a component damage model to produce a model relating downtime to hazard severity.

Component Fragility Curve. A mathematical expression, represented graphically as a curve, that relates the probability of a component reaching or exceeding a particular damage state, given a specific level of a hazard.

Component Loss Algorithm or Model. A component damage algorithm or model in which component repair costs are the defined damage states.

Damage. Physical disruption, such as cracking in walls or overturning of equipment (often used synonymously but erroneously with **Loss**).

Deaggregation Methods. A mathematical technique for attributing seismic hazard results (probabilistic ground motion estimates) to earthquake source and locational parameters. By utilizing this technique, analysts can identify those earthquake faults and return periods that contribute most to the estimate of probabilistic ground motions for a site or region.

Deterministic. A method of engineering and decision-making evaluation based solely on the selection of a few natural hazards events used as scenarios. For instance, a previous flood may be used as the basis for a scenario evaluation of what would happen if that flood reoccurred.

Earthquake. A sudden ground motion or trembling caused by an abrupt release of accumulated strain acting on the tectonic plates that comprise the Earth's crust. (FEMA, 1997). A sudden motion or trembling in the earth caused by the abrupt release of slowly accumulated strain.

Earthquake Hazard. The representation of an earthquake hazard can cover ground shaking, response spectra (peak spectral acceleration, peak spectral velocity, peak spectral displacement), peak ground velocity, peak ground acceleration, duration of significant shaking, time-history evaluation, and/or permanent ground deformation including fault offset.

Exposure. The number, types, qualities, and monetary values of various types of property or infrastructure, life, and environment that may be subject to an undesirable or injurious hazard event.

Exposure Period. The period of time over which risk is to be computed; the period of time over which a facility or population at risk is subjected to a hazard.

Fault. A fracture along which there has been significant displacement of the two sides relative to each other parallel to the fracture. *Strike-slip faults* are predominantly vertical fractures along which rock masses have mostly shifted horizontally. If the block opposite an observer looking across the fault moves to the right, the slip style is termed right lateral; if the block moves to the left, the motion is termed left-lateral. *Dip-slip faults* are inclined fractures along which rock masses have mostly shifted vertically. If the rock mass above an inclined fault is depressed by slip, then the fault is termed *normal*, whereas if the rock above the fault is elevated by slip, then the fault is termed *thrust* (or *reverse*). *Oblique-slip faults* have significant components of both slip styles.

Fault Rupture. The differential movement of two landmasses along a fault. A concentrated, permanent deformation that occurs along the **fault trace** and caused by **slip** on the fault.

Flooding. The accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. A rising body of water (as in a stream, lake, or sea, or behind a dam) that overtops its natural or artificial confines and that covers land not normally under water; esp. any relatively high stream flow that overflows its banks in any reach of the stream, or that is measured by gage height or discharge quantity.

Flood-coastal. Abnormally high water on open and semi-enclosed bodies of water resulting from storm surge and tsunami, precipitation, tide, wind-wave activity, and possible flood at nearby stream.

Floodplain. The land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding.

Flood-river. Abnormally high water on an inland stream resulting from precipitation and snowmelt runoff, possible ice blockage, wind-wave activity, and possible dam failure or stream diversion.

Fragility. See **Vulnerability Model.**

Frequency. See **Probability and Frequency.**

Frost Heave, Frost Heaving. The uneven lifting or upward movement, and general distortion, of surface soils, rocks, vegetation, and structures such as pavements, due to subsurface freezing of water and growth of ice masses (esp. ice lenses); any upheaval of ground caused by freezing.

Geohazard. See earthquake hazard, landslide, ground failure, settlement, and frost heave.

GIS. GIS is an acronym for geographic information system. This describes a geospatial technology that allows user to 'correlate' or tie different sets together by having common geographic coordinates.

Graphic Methods. Methods that allow easy overlay of hazard and system information. Usually, these methods are facilitated using some type of GIS system or tool. By overlaying power system maps onto hazard maps (e.g., location of liquefiable areas; flood hazard zones; or extreme wind areas), a user can make a quick and simple assessment of whether his or her system is at risk.

Ground Failure. A general reference to fault rupture, liquefaction, landsliding, and lateral spreading that can occur during an earthquake or other land movement causes.

Ground Shaking. A general term referring to the qualitative or quantitative aspects of movement of the ground surface from earthquakes. Ground shaking is produced by **seismic waves** that are generated by sudden slip on a fault and travel through the earth and along the surface of the earth.

Hazard. An event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss. (FEMA, 1997) A chemical or physical condition that has the potential for causing damage to people, property, or the environment.

Hazard Event Identification. The process of defining the source of a specific hazard, including its magnitude and source location. For modeling events probabilistically, expected frequency of occurrence of the initiating hazard as a function of its severity and location also needs to be modeled.

Hazard Identification. The process of defining and describing a hazard, including its physical characteristics, magnitude and severity, probability and frequency, causative factors, and locations/areas affected.

Hurricane. A severe tropical cyclone with winds exceeding approximately 74 miles per hour, usually originating in the tropical regions of the Atlantic Ocean or Caribbean Sea.

Intensity. A subjective numerical index describing the severity of a hazard in terms of its effects on the ground surface and on people, structures, and the environment.

Landslide. The downward and outward movement of slope-forming earth materials reacting under the force of gravity. The term covers a broad category of events, including mudflows, mudslides, debris flows, rock falls, rock slides, debris avalanches, debris slides, and earth flows. When slopes lose shear strength because of a disturbance such as ground shaking.

Land subsidence. The loss of surface elevation owing to the removal of subsurface support. Settlement of the surface of the ground, usually occurring over a large area, sometimes precipitated by a removal of water or oil.

Lateral Spreads. The landsliding of gentle, water-saturated slopes with rapid fluid-like flow movement caused by ground shaking and liquefaction. Large elements of distributed, lateral displacement of earth materials.

Liquefaction. A process by which water-saturated soil temporarily loses shear strength due to build-up of pore pressure and acts as a fluid. The result can be foundation bearing failure, differential settlement, lateral spreading, or floating of underground components.

Local Seismic Hazards. Earthquake effects (i.e., strong ground shaking), inundation (e.g., tsunami, seiche, dam failure), various kinds of permanent ground failure (e.g., fault rupture, liquefaction), fire or hazardous materials release at the site-specific scale.

Loss. The human or financial consequences of **damage**, such as human death or injury, cost of repairs, or disruption of social, economic, or environmental systems.

Magnitude. A unique measure of an individual earthquake's release of strain energy, measured on a variety of scales, of which the moment magnitude, M_w (derived from **seismic moment**) is often preferred. (See **Richter Scale**.)

Mean. Here, arithmetic mean, the average value in a distribution.

Microzonation. A term that refers to small-scale zoning that incorporates realistic information on local conditions, e.g., soil conditions.

Mitigation. Sustained action taken to reduce or eliminate long-term costs and risks to people and property from hazards and their effects. Mitigation distinguishes actions that have a long-term impact from those that are more closely associated with preparedness for, immediate response to, and short-term recovery from a specific event.

Natural Hazard. In the context of this Guideline, a natural phenomenon that has the potential for causing damage to lifeline structures, systems, or components.

Parallel System or Sub-system. A system or sub-system in which there are multiple sources or at least multiple pathways or conduits to service connections. For an antonym, see series system or sub-system. An example would be having multiple sources of power generation, or multiple transmission lines that can carry power to a particular area.

Peak Ground Acceleration (PGA). The maximum amplitude of recorded acceleration (also termed the ZPA, or zero-period acceleration).

Performance Objectives. A range of limiting structural damage and functionality states for a facility or system, given a specific hazard. Very typically, only facility performance objectives are considered. This document emphasizes the application of system performance metrics in the light of **system performance objectives.**

Probabilistic Methods. Scientific, engineering, and financial methods of calculating severities and intensities of hazard occurrences and responses of facilities that take into account the frequency of occurrence as well as the randomness and uncertainty associated with the natural phenomena and associated structural and social response. An example would be the frequency or likelihood of experiencing a certain flood height within a 10-year period.

Probability and Frequency. Frequency measures how often an event (including a natural hazard event, a state or condition of a component, or a state or condition of the system) occurs. One way to express expected frequency is the average time between occurrences or exceedances (non-exceedances) of an event. The mean annual rate of occurrence of a hazard parameter within a range of values is another way to express expected frequency of a hazard. Probabilities express the change of the event occurring or being exceeded (not exceeded) in a given unit of time. Whereas probabilities of occurrence cannot exceed 1.0, expected frequencies (for a given time unit) can exceed 1.0. For instance, expected frequencies of auto accidents in Washington, D.C. for a given year are far in excess of 1.0 even though the probability of an auto accident within a given year can only approach very closely 1.0.

Probability of Exceedance. A measure (expressed as a percentage or ratio) of estimation of the chance that an event will meet or exceed a specified threshold (e.g., magnitude, intensity, or loss) within a period of time.

Q3. Flood map data available from FEMA (www.fema.gov). These data indicate where frequent flooding areas occur throughout the U.S.

Recurrence Interval. The average time span between like events (such as large hazard intensities exceeding a particular intensity) at a particular site or for a specific region (also termed return period).

Return Period. See **Recurrence Interval.**

Richter Scale. A system developed by American seismologist Charles Richter in 1935 to measure the strength (or **magnitude**) of an earthquake, indicating the energy released in an event. Owing to limitations in the instrument used (a Wood-Anderson Seismograph) and the waves it measures, this scale has been supplement by other, more comprehensive measure of earthquake size (often moment magnitude, M_w).

Risk. The chance of adverse consequences. The combination of the expected likelihood and the consequences of incidents that could result from a particular activity.

Risk Assessment. An evaluation of the risk associated with a specific hazard. Quantitative elements of this assessment are defined in terms of probabilities and/or frequencies of occurrence and severity of consequences.

Risk Reduction Measures. Those activities that reduce overall the costs and risks associated with specific hazards.

Scenario. A type of event as defined by its natural hazard source parameters. That is, a scenario is defined by the source (the initiating event, e.g., the initial location and its severity expressed in such terms as magnitude or wind velocity), which may have many variable consequences dependent on random factors. A simulation is the assessment of these random factors to define specifically the consequences of the specific source event.

Scenario Loss. The loss from one scenario event (given specific values of the random values for other factors not defining the specific scenario).

Seiche. A standing wave oscillation of an enclosed water body that continues, pendulum fashion, after the cessation of the originating force, which may have been either seismic or atmospheric.

Seismicity. The geographic and historical distribution of past historic or future expected earthquakes.

Seismic Waves. A general categorization of motions that originate from the source of an event. These waves can fall into several different groups: body waves and surface waves. Different wave types can affect structures very differently depending upon the frequency of the structure. There are short- and mid-period waves that will generally have a great impact on low- and mid-rise construction; there are long-period waves that will damage tall, flexible structures, like high-rise buildings.

Series System or Sub-system. A system or sub-system that is non-redundant, lacking multiple water sources and lacking multiple pathways to the service connections or fire hydrants. For an antonym, see parallel system or sub-system.

Simulation. The exercise or use of a model to create likely or possible scenarios or events; a simulated event based on modeling.

Simulation Methods. Methods that are especially adaptable for measuring system impacts or effects. Usually requires a detailed characterization of the system (e.g., network model, including detailed information on individual elements) and detailed mapping of hazards for large regions. More applicable to highly netted transmission or distribution systems. This method can be limited using specific scenarios of interest or fully probabilistic (i.e., accounting for all quantifiable uncertainties, including the occurrence of the hazard).

Slip. The relative displacement of formerly adjacent points on opposite sides of a fault, measured on the fault surface.

Soil or Rock Slides. Downward displacement along one or more failure surfaces.

Storm Surge. When the water level of a tidally influenced body of water increases above the normal astronomical high tide.

System Performance Metrics. Quantitative measures by which the performance of a system may be evaluated.

System Performance Objectives. See **Performance Objectives.**

System Risk Evaluation. The evaluation of the probabilities of adverse consequences to the system. A more thorough evaluation than merely the evaluation of the system at risk, the severity and likelihood of natural hazards, or the vulnerability of components to natural hazards.

System Vulnerability Evaluation. The evaluation of system performance relative to a small number of selected natural hazard states or scenarios. Generally suitable for emergency planning, but not for financial evaluations that require a Systems Risk Evaluation.

System Vulnerability Model. See Vulnerability Function or Model.

Tornado. A rapidly rotating vortex or funnel of air extending groundward from a cumulonimbus cloud. A violently rotating column of air pendent from a convective type cloud and nearly always observable as a funnel cloud or tube. Tornadoes have large rotational wind speeds, pressure gradients along their radii and translational movement. A tornado can create structural loadings. A tornado has the potential for creating missiles, the characteristics of which depend on the intensity of the tornado.

Tropical Cyclone. A low-pressure area of closed circulation winds that originates over tropical waters. Winds rotate counterclockwise in the Northern Hemisphere. (FEMA, 1997).

Tsunamis. A series of sea or lake waves produced from the displacement of water by either a local or distant submarine earthquake, volcanic eruption, submarine or coastal landslide. A tsunami may cause flooding loss, impact loads from waves or floating debris, or both, and erosion of earth foundations from structures.

Vulnerability Function or Model. A function that relates facility performance (such as damage or failure) to some measure of hazard intensity (e.g., ground motion level).

Windstorms. See **Tornado, Hurricane, Blizzard, and Tropical Cyclone.**

Appendix A: Hazard Level Information by State and County

The following descriptors are used for the table in this appendix:

ID: Unique Identification Number
COUNTY: Name of County
STATE: Name of State
FIPS: "Federal Information Processing Standard" Code (State & County)
Earthquake: Whether the County is at "High," "Medium," or "Low" risk of earthquake hazard
Landslide: Whether the County is at "High," "Medium," or "Low" risk of Landslide hazard
Wind: Whether the County is at "High," "Medium," or "Low" risk of Wind related hazard
Tornado: Whether the County is at "High," "Medium," or "Low" risk of Tornado hazard
Flood: Whether there is existing FEMA Q3 data for the County or not (NOQ3=Q3 Data Not Available; Q3=Q3 Data Available)

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1	Autauga	Alabama	01001	Low	Med	Med	Low	NOQ3
2	Baldwin	Alabama	01003	Low	Low	High	Med	Q3
3	Barbour	Alabama	01005	Low	Low	Med	Low	Q3
4	Bibb	Alabama	01007	Med	Med	Med	Low	NOQ3
5	Blount	Alabama	01009	Med	High	Med	Med	NOQ3
6	Bullock	Alabama	01011	Low	Low	Med	Low	NOQ3
7	Butler	Alabama	01013	Low	Low	Med	Low	NOQ3
8	Calhoun	Alabama	01015	Med	High	Low	Low	Q3
9	Chambers	Alabama	01017	Med	Low	Med	Low	NOQ3
10	Cherokee	Alabama	01019	Med	High	Low	Low	NOQ3
11	Chilton	Alabama	01021	Med	Med	Med	Low	NOQ3
12	Choctaw	Alabama	01023	Low	High	Med	Low	NOQ3
13	Clarke	Alabama	01025	Low	High	High	Low	NOQ3
14	Clay	Alabama	01027	Med	High	Med	Med	NOQ3
15	Cleburne	Alabama	01029	Med	High	Low	Low	NOQ3
16	Coffee	Alabama	01031	Low	Low	High	Med	Q3
17	Colbert	Alabama	01033	Med	Med	Med	Med	NOQ3
18	Conecuh	Alabama	01035	Low	Low	High	Low	Q3
19	Coosa	Alabama	01037	Med	Low	Med	Low	NOQ3
20	Covington	Alabama	01039	Low	Low	High	Low	Q3
21	Crenshaw	Alabama	01041	Low	Low	Med	Low	NOQ3
22	Cullman	Alabama	01043	Med	High	Med	Med	NOQ3
23	Dale	Alabama	01045	Low	Low	Med	Med	Q3
24	Dallas	Alabama	01047	Low	Low	Med	Low	Q3
25	De Kalb	Alabama	01049	Med	High	Med	Med	NOQ3
26	Elmore	Alabama	01051	Low	Med	Med	Low	NOQ3
27	Escambia	Alabama	01053	Low	Low	High	Low	NOQ3
28	Etowah	Alabama	01055	Med	High	Med	Med	NOQ3
29	Fayette	Alabama	01057	Med	High	Med	Med	NOQ3
30	Franklin	Alabama	01059	Med	Med	Low	Low	NOQ3
31	Geneva	Alabama	01061	Low	Low	High	Low	Q3
32	Greene	Alabama	01063	Med	Low	Med	Low	NOQ3
33	Hale	Alabama	01065	Med	Med	Med	Low	NOQ3
34	Henry	Alabama	01067	Low	Low	Med	Low	Q3
35	Houston	Alabama	01069	Low	Low	Med	Low	Q3
36	Jackson	Alabama	01071	Med	High	Low	Low	NOQ3
37	Jefferson	Alabama	01073	Med	Med	Med	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
38	Lamar	Alabama	01075	Med	Med	Low	Low	NOQ3
39	Lauderdale	Alabama	01077	Med	Med	Low	Low	NOQ3
40	Lawrence	Alabama	01079	Med	High	Low	Low	NOQ3
41	Lee	Alabama	01081	Low	High	Med	Low	NOQ3
42	Limestone	Alabama	01083	Med	Med	Low	Low	Q3
43	Lowndes	Alabama	01085	Low	Low	Med	Low	NOQ3
44	Macon	Alabama	01087	Low	High	Med	Low	NOQ3
45	Madison	Alabama	01089	Med	Med	Low	Low	Q3
46	Marengo	Alabama	01091	Low	Med	Med	Low	NOQ3
47	Marion	Alabama	01093	Med	Med	Low	Low	NOQ3
48	Marshall	Alabama	01095	Med	High	Low	Low	NOQ3
49	Mobile	Alabama	01097	Low	Med	High	Low	Q3
50	Monroe	Alabama	01099	Low	Low	High	Low	NOQ3
51	Montgomery	Alabama	01101	Low	Low	Med	Low	Q3
52	Morgan	Alabama	01103	Med	Med	Low	Low	Q3
53	Perry	Alabama	01105	Med	Med	Med	Low	NOQ3
54	Pickens	Alabama	01107	Med	Med	Med	Low	NOQ3
55	Pike	Alabama	01109	Low	Low	Med	Med	NOQ3
56	Randolph	Alabama	01111	Med	Low	Med	Low	Q3
57	Russell	Alabama	01113	Low	High	Med	Low	Q3
58	Shelby	Alabama	01117	Med	Med	Med	Low	NOQ3
59	St Clair	Alabama	01115	Med	High	Low	Low	Q3
60	Sumter	Alabama	01119	Low	Low	Med	Low	NOQ3
61	Talladega	Alabama	01121	Med	High	Med	Med	Q3
62	Tallapoosa	Alabama	01123	Med	Low	Med	Low	NOQ3
63	Tuscaloosa	Alabama	01125	Med	Med	Med	Low	Q3
64	Walker	Alabama	01127	Med	High	Med	Med	NOQ3
65	Washington	Alabama	01129	Low	High	High	Low	NOQ3
66	Wilcox	Alabama	01131	Low	Med	Med	Low	NOQ3
67	Winston	Alabama	01133	Med	High	Low	Low	NOQ3
68	Aleutians East	Alaska	02013	High	Low	High	Low	NOQ3
69	Aleutians West	Alaska	02016	High	Low	High	Low	NOQ3
70	Anchorage	Alaska	02020	High	Low	High	Low	NOQ3
71	Bethel	Alaska	02050	Med	Low	High	Low	NOQ3
72	Bristol Bay	Alaska	02060	High	Low	High	Low	NOQ3
73	Dillingham	Alaska	02070	Low	Low	High	Low	NOQ3
74	Fairbanks North Star	Alaska	02090	Med	Low	Low	Low	Q3
75	Haines	Alaska	02100	Low	Low	High	Low	NOQ3
76	Juneau	Alaska	02110	Low	Low	High	Low	NOQ3
77	Kenai Peninsula	Alaska	02122	High	Low	High	Low	NOQ3
78	Ketchikan Gateway	Alaska	02130	Low	Low	High	Low	NOQ3
79	Kodiak Island	Alaska	02150	High	Low	High	Low	NOQ3
80	Lake & Peninsula	Alaska	02164	High	Low	High	Low	NOQ3
81	Matanuska-Susitna	Alaska	02170	Med	Low	High	Low	NOQ3
82	Nome	Alaska	02180	Low	Low	High	Low	NOQ3
83	North Slope	Alaska	02185	Low	Low	High	Low	NOQ3
84	Northwest Arctic	Alaska	02188	Low	Low	High	Low	NOQ3
85	Prince of Wales	Alaska	02201	Low	Low	High	Low	NOQ3
86	SE Fairbanks	Alaska	02240	Med	Low	Low	Low	NOQ3
87	Sitka	Alaska	02220	Low	Low	High	Low	NOQ3
88	Skagway-Yakutat-Ango	Alaska	02231	Low	Low	High	Low	NOQ3
89	Valdez-Cordova	Alaska	02261	High	Low	High	Low	NOQ3
90	Wade-Hampton	Alaska	02270	Low	Low	High	Low	NOQ3
91	Wrangell-Petersburg	Alaska	02280	Low	Low	High	Low	NOQ3
92	Yukon-koyukuk	Alaska	02290	Med	Low	High	Low	NOQ3
93	Apache	Arizona	04001	Med	High	Low	Low	NOQ3
94	Cochise	Arizona	04003	Med	High	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
95	Coconino	Arizona	04005	Med	High	Low	Low	Q3
96	Gila	Arizona	04007	Med	Med	Low	Low	Q3
97	Graham	Arizona	04009	Med	Low	Low	Low	NOQ3
98	Greenlee	Arizona	04011	Med	Low	Low	Low	Q3
99	La Paz	Arizona	04012	Med	Low	Low	Low	NOQ3
100	Maricopa	Arizona	04013	Med	Low	Low	Low	Q3
101	Mohave	Arizona	04015	Med	High	Low	Low	Q3
102	Navajo	Arizona	04017	Med	High	Low	Low	Q3
103	Pima	Arizona	04019	Med	Low	Low	Low	Q3
104	Pinal	Arizona	04021	Med	High	Low	Low	NOQ3
105	Santa Cruz	Arizona	04023	Med	Med	Low	Low	Q3
106	Yavapai	Arizona	04025	Med	Med	Low	Low	Q3
107	Yuma	Arizona	04027	Med	Low	Low	Low	NOQ3
108	Arkansas	Arkansas	05001	Med	Low	Med	Med	NOQ3
109	Ashley	Arkansas	05003	Med	Low	Low	Low	NOQ3
110	Baxter	Arkansas	05005	Med	Low	Low	Low	Q3
111	Benton	Arkansas	05007	Low	Low	Med	Med	Q3
112	Boone	Arkansas	05009	Med	Med	Low	Low	NOQ3
113	Bradley	Arkansas	05011	Med	Low	Low	Low	Q3
114	Calhoun	Arkansas	05013	Med	Low	Low	Low	NOQ3
115	Carroll	Arkansas	05015	Med	Med	Low	Low	NOQ3
116	Chicot	Arkansas	05017	Med	High	Low	Low	NOQ3
117	Clark	Arkansas	05019	Med	High	Med	Med	NOQ3
118	Clay	Arkansas	05021	High	Low	Low	Low	NOQ3
119	Cleburne	Arkansas	05023	Med	Med	Med	Med	Q3
120	Cleveland	Arkansas	05025	Med	Low	Low	Low	Q3
121	Columbia	Arkansas	05027	Low	Low	Med	Med	Q3
122	Conway	Arkansas	05029	Med	Med	Med	Med	NOQ3
123	Craighead	Arkansas	05031	High	Low	Med	Med	Q3
124	Crawford	Arkansas	05033	Low	Med	Low	Low	NOQ3
125	Crittenden	Arkansas	05035	High	High	Low	Low	Q3
126	Cross	Arkansas	05037	High	Low	Low	Low	Q3
127	Dallas	Arkansas	05039	Med	Low	Low	Low	Q3
128	Desha	Arkansas	05041	Med	High	Low	Low	Q3
129	Drew	Arkansas	05043	Med	Low	Low	Low	Q3
130	Faulkner	Arkansas	05045	Med	Med	Med	Med	Q3
131	Franklin	Arkansas	05047	Low	Med	Low	Low	NOQ3
132	Fulton	Arkansas	05049	Med	Low	Low	Low	NOQ3
133	Garland	Arkansas	05051	Med	Med	Med	Med	NOQ3
134	Grant	Arkansas	05053	Med	Low	Low	Low	Q3
135	Greene	Arkansas	05055	High	Low	Med	Med	Q3
136	Hempstead	Arkansas	05057	Med	High	Low	Low	NOQ3
137	Hot Spring	Arkansas	05059	Med	High	Med	Med	NOQ3
138	Howard	Arkansas	05061	Low	Med	Med	Med	NOQ3
139	Independence	Arkansas	05063	Med	High	Med	Med	NOQ3
140	Izard	Arkansas	05065	Med	Low	Low	Low	Q3
141	Jackson	Arkansas	05067	High	High	Med	Med	Q3
142	Jefferson	Arkansas	05069	Med	Low	Low	Low	Q3
143	Johnson	Arkansas	05071	Med	High	Med	Med	NOQ3
144	Lafayette	Arkansas	05073	Low	Low	Low	Low	Q3
145	Lawrence	Arkansas	05075	High	Low	Low	Low	NOQ3
146	Lee	Arkansas	05077	Med	High	Low	Low	NOQ3
147	Lincoln	Arkansas	05079	Med	Low	Low	Low	Q3
148	Little River	Arkansas	05081	Low	Low	Low	Low	NOQ3
149	Logan	Arkansas	05083	Med	High	Low	Low	NOQ3
150	Lonoke	Arkansas	05085	Med	High	Med	Med	Q3
151	Madison	Arkansas	05087	Med	Med	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
152	Marion	Arkansas	05089	Med	Low	Low	Low	NOQ3
153	Miller	Arkansas	05091	Low	Low	Low	Low	NOQ3
154	Mississippi	Arkansas	05093	High	High	Med	Med	Q3
155	Monroe	Arkansas	05095	Med	Low	Low	Low	Q3
156	Montgomery	Arkansas	05097	Med	Med	Low	Low	Q3
157	Nevada	Arkansas	05099	Med	High	Low	Low	NOQ3
158	Newton	Arkansas	05101	Med	High	Low	Low	NOQ3
159	Ouachita	Arkansas	05103	Med	Low	Low	Low	Q3
160	Perry	Arkansas	05105	Med	Med	Low	Low	NOQ3
161	Phillips	Arkansas	05107	Med	High	Low	Low	Q3
162	Pike	Arkansas	05109	Med	Med	Low	Low	NOQ3
163	Poinsett	Arkansas	05111	High	Low	Med	Med	Q3
164	Polk	Arkansas	05113	Low	Med	Low	Low	NOQ3
165	Pope	Arkansas	05115	Med	High	Low	Low	NOQ3
166	Prairie	Arkansas	05117	Med	Low	Med	Med	NOQ3
167	Pulaski	Arkansas	05119	Med	High	Med	Med	Q3
168	Randolph	Arkansas	05121	Med	Low	Low	Low	NOQ3
169	Saline	Arkansas	05125	Med	High	Low	Low	NOQ3
170	Scott	Arkansas	05127	Low	High	Low	Low	NOQ3
171	Searcy	Arkansas	05129	Med	High	Low	Low	NOQ3
172	Sebastian	Arkansas	05131	Low	High	Med	Med	Q3
173	Sevier	Arkansas	05133	Low	Low	Low	Low	NOQ3
174	Sharp	Arkansas	05135	Med	Low	Low	Low	Q3
175	St Francis	Arkansas	05123	High	High	Low	Low	Q3
176	Stone	Arkansas	05137	Med	High	Low	Low	Q3
177	Union	Arkansas	05139	Med	Low	Low	Low	Q3
178	Van Buren	Arkansas	05141	Med	Med	Low	Low	Q3
179	Washington	Arkansas	05143	Low	Med	Low	Low	NOQ3
180	White	Arkansas	05145	Med	High	Med	Med	NOQ3
181	Woodruff	Arkansas	05147	High	Low	Med	Med	NOQ3
182	Yell	Arkansas	05149	Med	High	Low	Low	NOQ3
183	Alameda	California	06001	High	High	Low	Low	Q3
184	Alpine	California	06003	High	Med	Low	Low	NOQ3
185	Amador	California	06005	Med	Med	Low	Low	Q3
186	Butte	California	06007	Med	High	Low	Low	NOQ3
187	Calaveras	California	06009	Med	Med	Low	Low	Q3
188	Colusa	California	06011	High	High	Low	Low	Q3
189	Contra Costa	California	06013	High	High	Low	Low	Q3
190	Del Norte	California	06015	High	High	Low	Low	Q3
191	El Dorado	California	06017	High	Med	Low	Low	Q3
192	Fresno	California	06019	High	High	Low	Low	Q3
193	Glenn	California	06021	High	High	Low	Low	Q3
194	Humboldt	California	06023	High	High	Low	Low	Q3
195	Imperial	California	06025	High	Low	Low	Low	Q3
196	Inyo	California	06027	High	High	Low	Low	Q3
197	Kern	California	06029	High	High	Low	Low	Q3
198	Kings	California	06031	High	High	Low	Low	Q3
199	Lake	California	06033	High	High	Low	Low	Q3
200	Lassen	California	06035	High	Low	Low	Low	Q3
201	Los Angeles	California	06037	High	High	Low	Low	Q3
202	Madera	California	06039	High	Low	Low	Low	Q3
203	Marin	California	06041	High	High	Low	Low	Q3
204	Mariposa	California	06043	Med	Med	Low	Low	Q3
205	Mendocino	California	06045	High	High	Low	Low	Q3
206	Merced	California	06047	High	High	Low	Low	Q3
207	Modoc	California	06049	High	Med	Low	Low	Q3
208	Mono	California	06051	High	High	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
209	Monterey	California	06053	High	High	Low	Low	Q3
210	Napa	California	06055	High	High	Low	Low	Q3
211	Nevada	California	06057	Med	High	Low	Low	Q3
212	Orange	California	06059	High	High	Med	Med	Q3
213	Placer	California	06061	High	High	Low	Low	Q3
214	Plumas	California	06063	High	Med	Low	Low	Q3
215	Riverside	California	06065	High	High	Low	Low	Q3
216	Sacramento	California	06067	High	Med	Low	Low	Q3
217	San Benito	California	06069	High	High	Low	Low	Q3
218	San Bernardino	California	06071	High	High	Low	Low	Q3
219	San Diego	California	06073	High	High	Low	Low	NOQ3
220	San Francisco	California	06075	High	Med	Low	Low	NOQ3
221	San Joaquin	California	06077	High	High	Low	Low	Q3
222	San Mateo	California	06081	High	High	Low	Low	Q3
223	Sanluis Obispo	California	06079	High	High	Low	Low	Q3
224	Santa Barbara	California	06083	High	High	Low	Low	Q3
225	Santa Clara	California	06085	High	High	Low	Low	Q3
226	Santa Cruz	California	06087	High	High	Low	Low	Q3
227	Shasta	California	06089	High	High	Low	Low	Q3
228	Sierra	California	06091	High	Med	Low	Low	Q3
229	Siskiyou	California	06093	High	High	Low	Low	Q3
230	Solano	California	06095	High	High	Low	Low	Q3
231	Sonoma	California	06097	High	High	Low	Low	Q3
232	Stanislaus	California	06099	High	High	Low	Low	Q3
233	Sutter	California	06101	Med	Low	Low	Low	Q3
234	Tehama	California	06103	High	High	Low	Low	Q3
235	Trinity	California	06105	High	High	Low	Low	Q3
236	Tulare	California	06107	Med	Med	Low	Low	Q3
237	Tuolumne	California	06109	High	Med	Low	Low	Q3
238	Ventura	California	06111	High	High	Low	Low	Q3
239	Yolo	California	06113	High	Med	Low	Low	Q3
240	Yuba	California	06115	Med	Med	Low	Low	Q3
241	Adams	Colorado	08001	Low	High	Med	Med	Q3
242	Alamosa	Colorado	08003	Med	Med	Low	Low	NOQ3
243	Arapahoe	Colorado	08005	Low	High	Med	Med	Q3
244	Archuleta	Colorado	08007	Med	High	Low	Low	NOQ3
245	Baca	Colorado	08009	Low	High	Low	Low	NOQ3
246	Bent	Colorado	08011	Low	High	Low	Low	NOQ3
247	Boulder	Colorado	08013	Med	High	Low	Low	Q3
248	Chaffee	Colorado	08015	Med	High	Low	Low	NOQ3
249	Cheyenne	Colorado	08017	Low	Med	Low	Low	NOQ3
250	Clear Creek	Colorado	08019	Med	Med	Low	Low	NOQ3
251	Conejos	Colorado	08021	Med	High	Low	Low	NOQ3
252	Costilla	Colorado	08023	Med	High	Low	Low	NOQ3
253	Crowley	Colorado	08025	Low	Med	Low	Low	NOQ3
254	Custer	Colorado	08027	Med	High	Low	Low	NOQ3
255	Delta	Colorado	08029	Med	High	Low	Low	NOQ3
256	Denver	Colorado	08031	Med	Med	Med	Med	Q3
257	Dolores	Colorado	08033	Med	High	Low	Low	NOQ3
258	Douglas	Colorado	08035	Med	Med	Med	Med	NOQ3
259	Eagle	Colorado	08037	Med	High	Low	Low	NOQ3
260	El Paso	Colorado	08041	Low	High	Med	Med	Q3
261	Elbert	Colorado	08039	Low	High	Med	Med	NOQ3
262	Fremont	Colorado	08043	Med	High	Low	Low	NOQ3
263	Garfield	Colorado	08045	Med	High	Low	Low	NOQ3
264	Gilpin	Colorado	08047	Med	Med	Low	Low	NOQ3
265	Grand	Colorado	08049	Med	High	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
266	Gunnison	Colorado	08051	Med	High	Low	Low	NOQ3
267	Hinsdale	Colorado	08053	Med	High	Low	Low	NOQ3
268	Huerfano	Colorado	08055	Med	High	Low	Low	NOQ3
269	Jackson	Colorado	08057	Med	High	Low	Low	NOQ3
270	Jefferson	Colorado	08059	Med	Med	Low	Low	Q3
271	Kiowa	Colorado	08061	Low	High	Low	Low	NOQ3
272	Kit Carson	Colorado	08063	Low	Med	Med	Med	NOQ3
273	La Plata	Colorado	08067	Med	High	Low	Low	NOQ3
274	Lake	Colorado	08065	Med	High	Low	Low	NOQ3
275	Larimer	Colorado	08069	Med	High	Low	Low	Q3
276	Las Animas	Colorado	08071	Med	High	Low	Low	NOQ3
277	Lincoln	Colorado	08073	Low	High	Low	Low	NOQ3
278	Logan	Colorado	08075	Low	Low	Low	Low	NOQ3
279	Mesa	Colorado	08077	Med	High	Low	Low	NOQ3
280	Mineral	Colorado	08079	Med	High	Low	Low	NOQ3
281	Moffat	Colorado	08081	Med	High	Low	Low	NOQ3
282	Montezuma	Colorado	08083	Med	High	Low	Low	NOQ3
283	Montrose	Colorado	08085	Med	High	Low	Low	NOQ3
284	Morgan	Colorado	08087	Low	High	Med	Med	Q3
285	Otero	Colorado	08089	Low	High	Low	Low	NOQ3
286	Ouray	Colorado	08091	Med	High	Low	Low	NOQ3
287	Park	Colorado	08093	Med	High	Low	Low	NOQ3
288	Phillips	Colorado	08095	Low	Low	Med	Med	NOQ3
289	Pitkin	Colorado	08097	Med	High	Low	Low	NOQ3
290	Prowers	Colorado	08099	Low	High	Med	Med	NOQ3
291	Pueblo	Colorado	08101	Med	High	Low	Low	Q3
292	Rio Blanco	Colorado	08103	Med	High	Low	Low	NOQ3
293	Rio Grande	Colorado	08105	Med	High	Low	Low	NOQ3
294	Routt	Colorado	08107	Med	High	Low	Low	NOQ3
295	Saguache	Colorado	08109	Med	High	Low	Low	NOQ3
296	San Juan	Colorado	08111	Med	High	Low	Low	NOQ3
297	San Miguel	Colorado	08113	Med	High	Low	Low	NOQ3
298	Sedgwick	Colorado	08115	Low	Low	Med	Med	NOQ3
299	Summit	Colorado	08117	Med	High	Low	Low	NOQ3
300	Teller	Colorado	08119	Med	Med	Low	Low	NOQ3
301	Washington	Colorado	08121	Low	High	Med	Med	NOQ3
302	Weld	Colorado	08123	Med	High	Med	Med	NOQ3
303	Yuma	Colorado	08125	Low	Med	Med	Med	NOQ3
304	Fairfield	Connecticut	09001	Med	Med	High	Low	Q3
305	Hartford	Connecticut	09003	Med	High	Med	Low	Q3
306	Litchfield	Connecticut	09005	Med	Low	Med	Low	Q3
307	Middlesex	Connecticut	09007	Med	High	High	Low	Q3
308	New Haven	Connecticut	09009	Med	Med	High	Low	Q3
309	New London	Connecticut	09011	Med	Low	High	Low	Q3
310	Tolland	Connecticut	09013	Med	Low	Med	Low	Q3
311	Windham	Connecticut	09015	Med	Low	High	Low	NOQ3
312	Kent	Delaware	10001	Med	Low	Med	Med	Q3
313	New Castle	Delaware	10003	Med	Med	Med	Med	Q3
314	Sussex	Delaware	10005	Low	Low	High	Low	Q3
315	Washington	District of Columbia	11001	Low	High	Low	Low	Q3
316	Alachua	Florida	12001	Low	Low	Med	Med	Q3
317	Baker	Florida	12003	Low	Low	Med	Low	Q3
318	Bay	Florida	12005	Low	Low	High	Med	Q3
319	Bradford	Florida	12007	Low	Low	Med	Med	NOQ3
320	Brevard	Florida	12009	Low	Low	High	Med	Q3
321	Broward	Florida	12011	Low	Low	High	Med	Q3
322	Calhoun	Florida	12013	Low	Low	High	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
323	Charlotte	Florida	12015	Low	Low	High	Med	Q3
324	Citrus	Florida	12017	Low	Low	High	Med	Q3
325	Clay	Florida	12019	Low	Low	High	Med	Q3
326	Collier	Florida	12021	Low	Low	High	Low	Q3
327	Columbia	Florida	12023	Low	Low	Med	Low	NOQ3
328	Dade	Florida	12025	Low	Low	High	Med	Q3
329	De Soto	Florida	12027	Low	Low	High	Med	Q3
330	Dixie	Florida	12029	Low	Low	High	Low	Q3
331	Duval	Florida	12031	Low	Low	High	Med	Q3
332	Escambia	Florida	12033	Low	Low	High	Med	Q3
333	Flagler	Florida	12035	Low	Low	High	Med	Q3
334	Franklin	Florida	12037	Low	Low	High	Med	Q3
335	Gadsden	Florida	12039	Low	Med	Med	Med	Q3
336	Gilchrist	Florida	12041	Low	Low	Med	Low	Q3
337	Glades	Florida	12043	Low	Low	High	Low	Q3
338	Gulf	Florida	12045	Low	Low	High	Med	Q3
339	Hamilton	Florida	12047	Low	Low	Med	Low	NOQ3
340	Hardee	Florida	12049	Low	Low	Med	Low	Q3
341	Hendry	Florida	12051	Low	Low	High	Low	Q3
342	Hernando	Florida	12053	Low	Low	High	Med	Q3
343	Highlands	Florida	12055	Low	Low	High	Med	Q3
344	Hillsborough	Florida	12057	Low	Low	High	Med	Q3
345	Holmes	Florida	12059	Low	Low	High	Low	Q3
346	Indian River	Florida	12061	Low	Low	High	Med	Q3
347	Jackson	Florida	12063	Low	Low	High	Med	Q3
348	Jefferson	Florida	12065	Low	Low	High	Low	NOQ3
349	Lafayette	Florida	12067	Low	Low	High	Low	NOQ3
350	Lake	Florida	12069	Low	Low	High	Med	Q3
351	Lee	Florida	12071	Low	Low	High	Med	Q3
352	Leon	Florida	12073	Low	Med	High	Low	Q3
353	Levy	Florida	12075	Low	Low	High	Low	Q3
354	Liberty	Florida	12077	Low	Med	High	Low	Q3
355	Madison	Florida	12079	Low	Low	Med	Low	NOQ3
356	Manatee	Florida	12081	Low	Low	High	Med	Q3
357	Marion	Florida	12083	Low	Low	Med	Med	Q3
358	Martin	Florida	12085	Low	Low	High	Med	Q3
359	Monroe	Florida	12087	Low	Low	High	Med	Q3
360	Nassau	Florida	12089	Low	Low	High	Med	Q3
361	Okaloosa	Florida	12091	Low	Low	High	Med	Q3
362	Okeechobee	Florida	12093	Low	Low	High	Low	NOQ3
363	Orange	Florida	12095	Low	Low	High	Med	Q3
364	Osceola	Florida	12097	Low	Low	High	Low	Q3
365	Palm Beach	Florida	12099	Low	Low	High	Med	Q3
366	Pasco	Florida	12101	Low	Low	High	Med	Q3
367	Pinellas	Florida	12103	Low	Low	High	Hig	h Q3
368	Polk	Florida	12105	Low	Low	High	Med	Q3
369	Putnam	Florida	12107	Low	Low	High	Med	Q3
370	Santa Rosa	Florida	12113	Low	Low	High	Med	Q3
371	Sarasota	Florida	12115	Low	Low	High	Med	Q3
372	Seminole	Florida	12117	Low	Low	High	Med	Q3
373	St Johns	Florida	12109	Low	Low	High	Med	Q3
374	St Lucie	Florida	12111	Low	Low	High	Med	Q3
375	Sumter	Florida	12119	Low	Low	Med	Low	Q3
376	Suwannee	Florida	12121	Low	Low	Med	Med	Q3
377	Taylor	Florida	12123	Low	Low	High	Low	NOQ3
378	Union	Florida	12125	Low	Low	Med	Low	NOQ3
379	Volusia	Florida	12127	Low	Low	High	Med	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
380	Wakulla	Florida	12129	Low	Low	High	Low	Q3
381	Walton	Florida	12131	Low	Low	High	Med	Q3
382	Washington	Florida	12133	Low	Low	High	Low	Q3
383	Appling	Georgia	13001	Med	Low	Med	Low	NOQ3
384	Atkinson	Georgia	13003	Low	Low	Med	Low	NOQ3
385	Bacon	Georgia	13005	Low	Low	Med	Med	NOQ3
386	Baker	Georgia	13007	Low	Low	Med	Low	Q3
387	Baldwin	Georgia	13009	Med	Low	Med	Low	NOQ3
388	Banks	Georgia	13011	Med	High	Low	Low	NOQ3
389	Barrow	Georgia	13013	Med	High	Low	Low	NOQ3
390	Bartow	Georgia	13015	Med	High	Med	Med	NOQ3
391	Ben Hill	Georgia	13017	Low	Low	Med	Med	NOQ3
392	Berrien	Georgia	13019	Low	Low	Med	Med	NOQ3
393	Bibb	Georgia	13021	Low	Low	Med	Med	Q3
394	Bleckley	Georgia	13023	Low	Low	Med	Med	NOQ3
395	Brantley	Georgia	13025	Low	Low	High	Low	NOQ3
396	Brooks	Georgia	13027	Low	Low	Med	Low	NOQ3
397	Bryan	Georgia	13029	Med	Low	High	Low	Q3
398	Bulloch	Georgia	13031	Med	Low	High	Low	NOQ3
399	Burke	Georgia	13033	Med	Low	Med	Low	NOQ3
400	Butts	Georgia	13035	Med	Low	Low	Low	Q3
401	Calhoun	Georgia	13037	Low	Low	Med	Low	Q3
402	Camden	Georgia	13039	Low	Low	High	Low	Q3
403	Candler	Georgia	13043	Med	Low	Med	Low	NOQ3
404	Carroll	Georgia	13045	Med	High	Med	Med	Q3
405	Catoosa	Georgia	13047	Med	Med	Low	Low	NOQ3
406	Charlton	Georgia	13049	Low	Low	High	Low	NOQ3
407	Chatham	Georgia	13051	Med	Low	High	Med	Q3
408	Chattahoochee	Georgia	13053	Low	High	Med	Low	NOQ3
409	Chattooga	Georgia	13055	Med	Med	Low	Low	NOQ3
410	Cherokee	Georgia	13057	Med	High	Med	Med	Q3
411	Clarke	Georgia	13059	Med	High	Med	Med	NOQ3
412	Clay	Georgia	13061	Low	Low	Med	Low	NOQ3
413	Clayton	Georgia	13063	Med	Low	Med	Med	Q3
414	Clinch	Georgia	13065	Low	Low	Med	Low	NOQ3
415	Cobb	Georgia	13067	Med	High	Med	Med	Q3
416	Coffee	Georgia	13069	Low	Low	Med	Low	NOQ3
417	Colquitt	Georgia	13071	Low	Low	Med	Med	NOQ3
418	Columbia	Georgia	13073	Med	Low	Med	Low	NOQ3
419	Cook	Georgia	13075	Low	Low	Med	Med	NOQ3
420	Coweta	Georgia	13077	Med	Low	Med	Med	Q3
421	Crawford	Georgia	13079	Low	Low	Med	Low	Q3
422	Crisp	Georgia	13081	Low	Low	Med	Low	Q3
423	Dade	Georgia	13083	Med	High	Low	Low	NOQ3
424	Dawson	Georgia	13085	Med	High	Med	Med	NOQ3
425	De Kalb	Georgia	13089	Med	High	Med	Med	Q3
426	Decatur	Georgia	13087	Low	Med	Med	Med	Q3
427	Dodge	Georgia	13091	Low	Low	Med	Low	Q3
428	Dooly	Georgia	13093	Low	Low	Med	Med	Q3
429	Dougherty	Georgia	13095	Low	Low	Med	Med	Q3
430	Douglas	Georgia	13097	Med	High	Med	Med	NOQ3
431	Early	Georgia	13099	Low	Low	Med	Med	Q3
432	Echols	Georgia	13101	Low	Low	Med	Low	NOQ3
433	Effingham	Georgia	13103	Med	Low	High	Low	NOQ3
434	Elbert	Georgia	13105	Med	High	Low	Low	NOQ3
435	Emanuel	Georgia	13107	Med	Low	Med	Low	NOQ3
436	Evans	Georgia	13109	Med	Low	Med	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
437	Fannin	Georgia	13111	Med	High	Low	Low	NOQ3
438	Fayette	Georgia	13113	Med	Low	Low	Low	Q3
439	Floyd	Georgia	13115	Med	Med	Med	Med	Q3
440	Forsyth	Georgia	13117	Med	High	Low	Low	NOQ3
441	Franklin	Georgia	13119	Med	High	Low	Low	NOQ3
442	Fulton	Georgia	13121	Med	High	Med	Med	Q3
443	Gilmer	Georgia	13123	Med	High	Low	Low	NOQ3
444	Glascock	Georgia	13125	Med	Low	Med	Low	NOQ3
445	Glynn	Georgia	13127	Low	Low	High	Med	Q3
446	Gordon	Georgia	13129	Med	High	Low	Low	NOQ3
447	Grady	Georgia	13131	Low	Low	Med	Med	NOQ3
448	Greene	Georgia	13133	Med	Med	Low	Low	NOQ3
449	Gwinnett	Georgia	13135	Med	High	Low	Low	NOQ3
450	Habersham	Georgia	13137	Med	High	Med	Med	NOQ3
451	Hall	Georgia	13139	Med	High	Med	Med	NOQ3
452	Hancock	Georgia	13141	Med	Low	Med	Low	NOQ3
453	Haralson	Georgia	13143	Med	High	Med	Med	Q3
454	Harris	Georgia	13145	Low	Low	Med	Med	NOQ3
455	Hart	Georgia	13147	Med	High	Low	Low	NOQ3
456	Heard	Georgia	13149	Med	Low	Med	Low	NOQ3
457	Henry	Georgia	13151	Med	Low	Low	Low	Q3
458	Houston	Georgia	13153	Low	Low	Med	Med	Q3
459	Irwin	Georgia	13155	Low	Low	Med	Low	NOQ3
460	Jackson	Georgia	13157	Med	High	Low	Low	NOQ3
461	Jasper	Georgia	13159	Med	Low	Med	Low	NOQ3
462	Jeff Davis	Georgia	13161	Low	Low	Med	Low	NOQ3
463	Jefferson	Georgia	13163	Med	Low	Med	Low	NOQ3
464	Jenkins	Georgia	13165	Med	Low	Med	Low	NOQ3
465	Johnson	Georgia	13167	Med	Low	Med	Low	NOQ3
466	Jones	Georgia	13169	Med	Low	Med	Low	Q3
467	Lamar	Georgia	13171	Low	Low	Med	Low	Q3
468	Lanier	Georgia	13173	Low	Low	Med	Low	NOQ3
469	Laurens	Georgia	13175	Med	Low	Med	Low	NOQ3
470	Lee	Georgia	13177	Low	Low	Med	Med	Q3
471	Liberty	Georgia	13179	Med	Low	High	Low	Q3
472	Lincoln	Georgia	13181	Med	Med	Med	Low	NOQ3
473	Long	Georgia	13183	Med	Low	High	Low	NOQ3
474	Lowndes	Georgia	13185	Low	Low	Med	Med	NOQ3
475	Lumpkin	Georgia	13187	Med	High	Low	Low	NOQ3
476	Macon	Georgia	13193	Low	Low	Med	Low	Q3
477	Madison	Georgia	13195	Med	High	Low	Low	NOQ3
478	Marion	Georgia	13197	Low	High	Med	Low	NOQ3
479	Mcduffie	Georgia	13189	Med	Low	Med	Low	NOQ3
480	Mcintosh	Georgia	13191	Med	Low	High	Low	Q3
481	Meriwether	Georgia	13199	Low	Low	Med	Med	Q3
482	Miller	Georgia	13201	Low	Low	Med	Low	Q3
483	Mitchell	Georgia	13205	Low	Low	Med	Med	Q3
484	Monroe	Georgia	13207	Med	Low	Med	Low	Q3
485	Montgomery	Georgia	13209	Med	Low	Med	Low	Q3
486	Morgan	Georgia	13211	Med	Low	Low	Low	NOQ3
487	Murray	Georgia	13213	Med	High	Med	Med	NOQ3
488	Muscogee	Georgia	13215	Low	High	Med	Med	NOQ3
489	Newton	Georgia	13217	Med	High	Low	Low	Q3
490	Oconee	Georgia	13219	Med	High	Med	Med	NOQ3
491	Oglethorpe	Georgia	13221	Med	High	Low	Low	NOQ3
492	Paulding	Georgia	13223	Med	High	Low	Low	NOQ3
493	Peach	Georgia	13225	Low	Low	Med	Med	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
494	Pickens	Georgia	13227	Med	High	Med	Med	NOQ3
495	Pierce	Georgia	13229	Low	Low	Med	Low	NOQ3
496	Pike	Georgia	13231	Low	Low	Med	Low	Q3
497	Polk	Georgia	13233	Med	High	Low	Low	Q3
498	Pulaski	Georgia	13235	Low	Low	Med	Med	Q3
499	Putnam	Georgia	13237	Med	Low	Med	Low	NOQ3
500	Quitman	Georgia	13239	Low	Low	Med	Low	Q3
501	Rabun	Georgia	13241	Med	High	Low	Low	NOQ3
502	Randolph	Georgia	13243	Low	Low	Med	Low	NOQ3
503	Richmond	Georgia	13245	Med	Low	Med	Low	Q3
504	Rockdale	Georgia	13247	Med	High	Med	Med	Q3
505	Schley	Georgia	13249	Low	Low	Med	Med	NOQ3
506	Screven	Georgia	13251	Med	Low	Med	Low	NOQ3
507	Seminole	Georgia	13253	Low	Low	Med	Low	Q3
508	Spalding	Georgia	13255	Low	Low	Med	Med	Q3
509	Stephens	Georgia	13257	Med	High	Med	Med	NOQ3
510	Stewart	Georgia	13259	Low	Low	Med	Low	Q3
511	Sumter	Georgia	13261	Low	Low	Med	Med	Q3
512	Talbot	Georgia	13263	Low	Low	Med	Low	Q3
513	Taliaferro	Georgia	13265	Med	Med	Med	Low	NOQ3
514	Tattnall	Georgia	13267	Med	Low	Med	Low	NOQ3
515	Taylor	Georgia	13269	Low	Low	Med	Low	NOQ3
516	Telfair	Georgia	13271	Low	Low	Med	Low	Q3
517	Terrell	Georgia	13273	Low	Low	Med	Low	Q3
518	Thomas	Georgia	13275	Low	Low	Med	Low	NOQ3
519	Tift	Georgia	13277	Low	Low	Med	Med	NOQ3
520	Toombs	Georgia	13279	Med	Low	Med	Low	Q3
521	Towns	Georgia	13281	Med	High	Low	Low	NOQ3
522	Treutlen	Georgia	13283	Med	Low	Med	Low	NOQ3
523	Troup	Georgia	13285	Low	Low	Med	Med	Q3
524	Turner	Georgia	13287	Low	Low	Med	Low	NOQ3
525	Twiggs	Georgia	13289	Med	Low	Med	Med	NOQ3
526	Union	Georgia	13291	Med	High	Low	Low	NOQ3
527	Upson	Georgia	13293	Low	Low	Med	Low	Q3
528	Walker	Georgia	13295	Med	Med	Low	Low	NOQ3
529	Walton	Georgia	13297	Med	High	Med	Med	NOQ3
530	Ware	Georgia	13299	Low	Low	Med	Low	NOQ3
531	Warren	Georgia	13301	Med	Low	Med	Low	NOQ3
532	Washington	Georgia	13303	Med	Low	Med	Low	NOQ3
533	Wayne	Georgia	13305	Med	Low	High	Low	NOQ3
534	Webster	Georgia	13307	Low	Low	Med	Low	NOQ3
535	Wheeler	Georgia	13309	Low	Low	Med	Low	Q3
536	White	Georgia	13311	Med	High	Low	Low	NOQ3
537	Whitfield	Georgia	13313	Med	Med	Low	Low	NOQ3
538	Wilcox	Georgia	13315	Low	Low	Med	Low	Q3
539	Wilkes	Georgia	13317	Med	Med	Med	Low	NOQ3
540	Wilkinson	Georgia	13319	Med	Low	Med	Low	NOQ3
541	Worth	Georgia	13321	Low	Low	Med	Med	Q3
542	Hawaii	Hawaii	15001	High	Low	High	Low	Q3
543	Honolulu	Hawaii	15003	Med	Low	High	Low	Q3
544	Kalawao	Hawaii	15005	Med	Low	High	Med	NOQ3
545	Kauai	Hawaii	15007	Low	Low	High	Low	Q3
546	Maui	Hawaii	15009	Med	Low	High	Low	Q3
547	Ada	Idaho	16001	Med	High	Low	Low	Q3
548	Adams	Idaho	16003	Med	Med	Low	Low	NOQ3
549	Bannock	Idaho	16005	Med	Low	Low	Low	NOQ3
550	Bear Lake	Idaho	16007	High	Med	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
551	Benewah	Idaho	16009	Med	Med	Low	Low	Q3
552	Bingham	Idaho	16011	Med	Med	Low	Low	Q3
553	Blaine	Idaho	16013	Med	High	Low	Low	Q3
554	Boise	Idaho	16015	Med	High	Low	Low	NOQ3
555	Bonner	Idaho	16017	Med	Low	Low	Low	Q3
556	Bonneville	Idaho	16019	High	High	Low	Low	Q3
557	Boundary	Idaho	16021	Med	Med	Low	Low	Q3
558	Butte	Idaho	16023	Med	High	Low	Low	NOQ3
559	Camas	Idaho	16025	Med	Med	Low	Low	NOQ3
560	Canyon	Idaho	16027	Med	Med	Low	Low	NOQ3
561	Caribou	Idaho	16029	High	High	Low	Low	NOQ3
562	Cassia	Idaho	16031	Med	Med	Low	Low	NOQ3
563	Clark	Idaho	16033	High	High	Low	Low	NOQ3
564	Clearwater	Idaho	16035	Med	Med	Low	Low	NOQ3
565	Custer	Idaho	16037	Med	High	Low	Low	Q3
566	Elmore	Idaho	16039	Med	High	Low	Low	NOQ3
567	Franklin	Idaho	16041	Med	High	Low	Low	NOQ3
568	Fremont	Idaho	16043	High	High	Low	Low	Q3
569	Gem	Idaho	16045	Med	Med	Low	Low	Q3
570	Gooding	Idaho	16047	Med	Low	Low	Low	NOQ3
571	Idaho	Idaho	16049	Med	High	Low	Low	NOQ3
572	Jefferson	Idaho	16051	Med	Med	Low	Low	Q3
573	Jerome	Idaho	16053	Med	Low	Low	Low	NOQ3
574	Kootenai	Idaho	16055	Med	Med	Low	Low	Q3
575	Latah	Idaho	16057	Med	Low	Low	Low	NOQ3
576	Lemhi	Idaho	16059	Med	High	Low	Low	NOQ3
577	Lewis	Idaho	16061	Med	Low	Low	Low	NOQ3
578	Lincoln	Idaho	16063	Med	Low	Low	Low	NOQ3
579	Madison	Idaho	16065	Med	Med	Low	Low	Q3
580	Minidoka	Idaho	16067	Med	Low	Low	Low	NOQ3
581	Nez Perce	Idaho	16069	Med	Low	Low	Low	NOQ3
582	Oneida	Idaho	16071	Med	High	Low	Low	NOQ3
583	Owyhee	Idaho	16073	Med	High	Low	Low	NOQ3
584	Payette	Idaho	16075	Med	Low	Low	Low	Q3
585	Power	Idaho	16077	Med	Med	Low	Low	NOQ3
586	Shoshone	Idaho	16079	Med	Med	Low	Low	Q3
587	Teton	Idaho	16081	Med	High	Low	Low	NOQ3
588	Twin Falls	Idaho	16083	Med	High	Low	Low	NOQ3
589	Valley	Idaho	16085	Med	High	Low	Low	NOQ3
590	Washington	Idaho	16087	Med	Med	Low	Low	Q3
591	Adams	Illinois	17001	Low	Med	Low	Low	Q3
592	Alexander	Illinois	17003	High	High	Med	Med	Q3
593	Bond	Illinois	17005	Med	Low	Low	Low	NOQ3
594	Boone	Illinois	17007	Low	Low	Low	Low	NOQ3
595	Brown	Illinois	17009	Low	Low	Low	Low	NOQ3
596	Bureau	Illinois	17011	Low	High	Low	Low	NOQ3
597	Calhoun	Illinois	17013	Med	High	Low	Low	Q3
598	Carroll	Illinois	17015	Low	High	Low	Low	NOQ3
599	Cass	Illinois	17017	Low	Low	Low	Low	NOQ3
600	Champaign	Illinois	17019	Med	Low	Med	Med	NOQ3
601	Christian	Illinois	17021	Med	Low	Low	Low	NOQ3
602	Clark	Illinois	17023	Med	Low	Low	Low	NOQ3
603	Clay	Illinois	17025	Med	Med	Low	Low	NOQ3
604	Clinton	Illinois	17027	Med	Low	Low	Low	Q3
605	Coles	Illinois	17029	Med	Med	Med	Med	NOQ3
606	Cook	Illinois	17031	Med	High	Med	Med	Q3
607	Crawford	Illinois	17033	Med	Low	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
608	Cumberland	Illinois	17035	Med	Low	Low	Low	NOQ3
609	De Kalb	Illinois	17037	Med	Low	Low	Low	Q3
610	De Witt	Illinois	17039	Low	Low	Med	Med	NOQ3
611	Douglas	Illinois	17041	Med	Low	Med	Med	NOQ3
612	Du Page	Illinois	17043	Med	Med	Med	Med	Q3
613	Edgar	Illinois	17045	Med	Med	Low	Low	NOQ3
614	Edwards	Illinois	17047	Med	Med	Med	Med	NOQ3
615	Effingham	Illinois	17049	Med	Low	Med	Med	NOQ3
616	Fayette	Illinois	17051	Med	Low	Low	Low	NOQ3
617	Ford	Illinois	17053	Low	Med	Med	Med	NOQ3
618	Franklin	Illinois	17055	Med	Med	Low	Low	NOQ3
619	Fulton	Illinois	17057	Low	High	Med	Med	NOQ3
620	Gallatin	Illinois	17059	Med	Med	Low	Low	Q3
621	Greene	Illinois	17061	Med	High	Low	Low	NOQ3
622	Grundy	Illinois	17063	Med	Med	Med	Med	Q3
623	Hamilton	Illinois	17065	Med	Med	Low	Low	NOQ3
624	Hancock	Illinois	17067	Low	Low	Low	Low	NOQ3
625	Hardin	Illinois	17069	Med	Low	Low	Low	Q3
626	Henderson	Illinois	17071	Low	High	Low	Low	NOQ3
627	Henry	Illinois	17073	Low	High	Med	Med	Q3
628	Iroquois	Illinois	17075	Low	Med	Med	Med	NOQ3
629	Jackson	Illinois	17077	High	High	Med	Med	NOQ3
630	Jasper	Illinois	17079	Med	Low	Low	Low	NOQ3
631	Jefferson	Illinois	17081	Med	Med	Low	Low	NOQ3
632	Jersey	Illinois	17083	Med	High	Low	Low	Q3
633	Jo Daviess	Illinois	17085	Low	High	Low	Low	NOQ3
634	Johnson	Illinois	17087	High	Low	Low	Low	NOQ3
635	Kane	Illinois	17089	Med	Low	Med	Med	Q3
636	Kankakee	Illinois	17091	Low	Med	Med	Med	Q3
637	Kendall	Illinois	17093	Med	Med	Med	Med	Q3
638	Knox	Illinois	17095	Low	High	Med	Med	NOQ3
639	La Salle	Illinois	17099	Med	High	Med	Med	Q3
640	Lake	Illinois	17097	Low	High	Med	Med	Q3
641	Lawrence	Illinois	17101	Med	Med	Low	Low	NOQ3
642	Lee	Illinois	17103	Med	Low	Med	Med	NOQ3
643	Livingston	Illinois	17105	Low	High	Low	Low	Q3
644	Logan	Illinois	17107	Med	Low	Med	Med	NOQ3
645	Macon	Illinois	17115	Med	Low	Med	Med	NOQ3
646	Macoupin	Illinois	17117	Med	High	Low	Low	NOQ3
647	Madison	Illinois	17119	Med	High	Med	Med	Q3
648	Marion	Illinois	17121	Med	Low	Low	Low	NOQ3
649	Marshall	Illinois	17123	Low	High	Low	Low	NOQ3
650	Mason	Illinois	17125	Low	High	Med	Med	NOQ3
651	Massac	Illinois	17127	High	Low	Low	Low	Q3
652	Mcdonough	Illinois	17109	Low	Low	Med	Med	NOQ3
653	Mchenry	Illinois	17111	Low	Low	Low	Low	Q3
654	Mclean	Illinois	17113	Low	Low	Med	Med	NOQ3
655	Menard	Illinois	17129	Low	Low	Low	Low	NOQ3
656	Mercer	Illinois	17131	Low	High	Low	Low	NOQ3
657	Monroe	Illinois	17133	Med	High	Med	Med	NOQ3
658	Montgomery	Illinois	17135	Med	Low	Med	Med	NOQ3
659	Morgan	Illinois	17137	Med	Low	Med	Med	NOQ3
660	Moultrie	Illinois	17139	Med	Low	Low	Low	NOQ3
661	Ogle	Illinois	17141	Low	Low	Low	Low	Q3
662	Peoria	Illinois	17143	Low	High	Med	Med	Q3
663	Perry	Illinois	17145	Med	Med	Med	Med	NOQ3
664	Piatt	Illinois	17147	Med	Low	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
665	Pike	Illinois	17149	Med	High	Low	Low	Q3
666	Pope	Illinois	17151	High	Low	Low	Low	Q3
667	Pulaski	Illinois	17153	High	High	Low	Low	NOQ3
668	Putnam	Illinois	17155	Low	High	Med	Med	NOQ3
669	Randolph	Illinois	17157	Med	High	Med	Med	NOQ3
670	Richland	Illinois	17159	Med	Med	Low	Low	NOQ3
671	Rock Island	Illinois	17161	Low	High	Med	Med	Q3
672	Saline	Illinois	17165	High	Med	Low	Low	NOQ3
673	Sangamon	Illinois	17167	Med	Low	Med	Med	NOQ3
674	Schuyler	Illinois	17169	Low	High	Med	Med	NOQ3
675	Scott	Illinois	17171	Med	Low	Low	Low	NOQ3
676	Shelby	Illinois	17173	Med	Low	Low	Low	NOQ3
677	St Clair	Illinois	17163	Med	High	Med	Med	Q3
678	Stark	Illinois	17175	Low	High	Med	Med	NOQ3
679	Stephenson	Illinois	17177	Low	Med	Low	Low	NOQ3
680	Tazewell	Illinois	17179	Low	High	Med	Med	Q3
681	Union	Illinois	17181	High	High	Low	Low	NOQ3
682	Vermilion	Illinois	17183	Med	Med	Med	Med	NOQ3
683	Wabash	Illinois	17185	Med	Med	Med	Med	NOQ3
684	Warren	Illinois	17187	Low	Low	Low	Low	NOQ3
685	Washington	Illinois	17189	Med	Low	Med	Med	NOQ3
686	Wayne	Illinois	17191	Med	Med	Low	Low	NOQ3
687	White	Illinois	17193	Med	Med	Low	Low	NOQ3
688	Whiteside	Illinois	17195	Low	High	Low	Low	NOQ3
689	Will	Illinois	17197	Med	Med	Med	Med	Q3
690	Williamson	Illinois	17199	High	Med	Low	Low	NOQ3
691	Winnebago	Illinois	17201	Low	Low	Low	Low	Q3
692	Woodford	Illinois	17203	Low	High	Med	Med	NOQ3
693	Adams	Indiana	18001	Med	Low	Med	Med	NOQ3
694	Allen	Indiana	18003	Low	Low	Med	Med	Q3
695	Bartholomew	Indiana	18005	Low	Med	Med	Med	Q3
696	Benton	Indiana	18007	Low	Low	Med	Med	NOQ3
697	Blackford	Indiana	18009	Low	Low	Low	Low	NOQ3
698	Boone	Indiana	18011	Low	Low	Med	Med	Q3
699	Brown	Indiana	18013	Med	Med	Low	Low	NOQ3
700	Carroll	Indiana	18015	Low	Low	Med	Med	NOQ3
701	Cass	Indiana	18017	Low	Low	Med	Med	NOQ3
702	Clark	Indiana	18019	Med	Med	Med	Med	Q3
703	Clay	Indiana	18021	Med	Med	Low	Low	NOQ3
704	Clinton	Indiana	18023	Low	Low	Med	Med	NOQ3
705	Crawford	Indiana	18025	Med	Med	Low	Low	Q3
706	Daviess	Indiana	18027	Med	Med	Med	Med	NOQ3
707	De Kalb	Indiana	18033	Low	Low	Low	Low	NOQ3
708	Dearborn	Indiana	18029	Low	High	Med	Med	Q3
709	Decatur	Indiana	18031	Low	Low	Med	Med	NOQ3
710	Delaware	Indiana	18035	Low	Low	Med	Med	Q3
711	Dubois	Indiana	18037	Med	Med	Low	Low	NOQ3
712	Elkhart	Indiana	18039	Low	Low	Med	Med	Q3
713	Fayette	Indiana	18041	Low	Low	Med	Med	NOQ3
714	Floyd	Indiana	18043	Med	Med	Low	Low	Q3
715	Fountain	Indiana	18045	Med	Low	Low	Low	NOQ3
716	Franklin	Indiana	18047	Low	High	Low	Low	Q3
717	Fulton	Indiana	18049	Low	Low	Med	Med	NOQ3
718	Gibson	Indiana	18051	Med	Med	Low	Low	NOQ3
719	Grant	Indiana	18053	Low	Low	Med	Med	NOQ3
720	Greene	Indiana	18055	Med	Med	Low	Low	NOQ3
721	Hamilton	Indiana	18057	Low	Low	Med	Med	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
722	Hancock	Indiana	18059	Low	Low	Med	Med	NOQ3
723	Harrison	Indiana	18061	Med	Med	Low	Low	Q3
724	Hendricks	Indiana	18063	Med	Med	Med	Med	NOQ3
725	Henry	Indiana	18065	Low	Low	Med	Med	NOQ3
726	Howard	Indiana	18067	Low	Low	Med	Med	NOQ3
727	Huntington	Indiana	18069	Low	Low	Med	Med	NOQ3
728	Jackson	Indiana	18071	Med	Med	Med	Med	Q3
729	Jasper	Indiana	18073	Low	Med	Med	Med	NOQ3
730	Jay	Indiana	18075	Med	Low	Low	Low	NOQ3
731	Jefferson	Indiana	18077	Low	High	Med	Med	Q3
732	Jennings	Indiana	18079	Low	Med	Med	Med	NOQ3
733	Johnson	Indiana	18081	Low	Med	Med	Med	Q3
734	Knox	Indiana	18083	Med	Med	Med	Med	NOQ3
735	Kosciusko	Indiana	18085	Low	Low	Med	Med	Q3
736	La Porte	Indiana	18091	Low	Med	Med	Med	Q3
737	Lagrange	Indiana	18087	Low	Low	Med	Med	NOQ3
738	Lake	Indiana	18089	Low	Med	Med	Med	Q3
739	Lawrence	Indiana	18093	Med	Med	Med	Med	NOQ3
740	Madison	Indiana	18095	Low	Low	Med	Med	NOQ3
741	Marion	Indiana	18097	Low	Low	Med	Med	Q3
742	Marshall	Indiana	18099	Low	Low	Med	Med	NOQ3
743	Martin	Indiana	18101	Med	Med	Low	Low	NOQ3
744	Miami	Indiana	18103	Low	Low	Med	Med	NOQ3
745	Monroe	Indiana	18105	Med	Med	Med	Med	NOQ3
746	Montgomery	Indiana	18107	Med	Low	Med	Med	NOQ3
747	Morgan	Indiana	18109	Med	Med	Med	Med	NOQ3
748	Newton	Indiana	18111	Low	Med	Med	Med	NOQ3
749	Noble	Indiana	18113	Low	Low	Med	Med	NOQ3
750	Ohio	Indiana	18115	Low	High	Low	Low	Q3
751	Orange	Indiana	18117	Med	Med	Low	Low	NOQ3
752	Owen	Indiana	18119	Med	Med	Med	Med	NOQ3
753	Parke	Indiana	18121	Med	Med	Low	Low	NOQ3
754	Perry	Indiana	18123	Med	Med	Low	Low	Q3
755	Pike	Indiana	18125	Med	Med	Med	Med	NOQ3
756	Porter	Indiana	18127	Low	Med	Med	Med	NOQ3
757	Posey	Indiana	18129	Med	Med	Low	Low	Q3
758	Pulaski	Indiana	18131	Low	Med	Med	Med	NOQ3
759	Putnam	Indiana	18133	Med	Med	Med	Med	NOQ3
760	Randolph	Indiana	18135	Med	Low	Med	Med	NOQ3
761	Ripley	Indiana	18137	Low	High	Med	Med	NOQ3
762	Rush	Indiana	18139	Low	Low	Med	Med	NOQ3
763	Scott	Indiana	18143	Med	Med	Med	Med	NOQ3
764	Shelby	Indiana	18145	Low	Med	Med	Med	Q3
765	Spencer	Indiana	18147	Med	Med	Low	Low	Q3
766	St Joseph	Indiana	18141	Low	Low	Med	Med	NOQ3
767	Starke	Indiana	18149	Low	Low	Med	Med	NOQ3
768	Steuben	Indiana	18151	Low	Low	Med	Med	NOQ3
769	Sullivan	Indiana	18153	Med	Med	Low	Low	NOQ3
770	Switzerland	Indiana	18155	Low	High	Med	Med	Q3
771	Tippecanoe	Indiana	18157	Low	Low	Med	Med	NOQ3
772	Tipton	Indiana	18159	Low	Low	Med	Med	NOQ3
773	Union	Indiana	18161	Low	Low	Low	Low	NOQ3
774	Vanderburgh	Indiana	18163	Med	Med	Med	Med	Q3
775	Vermillion	Indiana	18165	Med	Low	Med	Med	NOQ3
776	Vigo	Indiana	18167	Med	Low	Med	Med	Q3
777	Wabash	Indiana	18169	Low	Low	Low	Low	NOQ3
778	Warren	Indiana	18171	Low	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
779	Warrick	Indiana	18173	Med	Med	Low	Low	Q3
780	Washington	Indiana	18175	Med	Med	Med	Med	NOQ3
781	Wayne	Indiana	18177	Med	Low	Med	Med	NOQ3
782	Wells	Indiana	18179	Med	Low	Med	Med	NOQ3
783	White	Indiana	18181	Low	Low	Low	Low	NOQ3
784	Whitley	Indiana	18183	Low	Low	Med	Med	NOQ3
785	Adair	Iowa	19001	Low	Med	Med	Med	NOQ3
786	Adams	Iowa	19003	Low	Low	Low	Low	NOQ3
787	Allamakee	Iowa	19005	Low	Med	Low	Low	NOQ3
788	Appanoose	Iowa	19007	Low	Med	Med	Med	NOQ3
789	Audubon	Iowa	19009	Low	Med	Low	Low	NOQ3
790	Benton	Iowa	19011	Low	Low	Low	Low	NOQ3
791	Black Hawk	Iowa	19013	Low	Low	Med	Med	Q3
792	Boone	Iowa	19015	Low	Med	Med	Med	NOQ3
793	Bremer	Iowa	19017	Low	Low	Med	Med	NOQ3
794	Buchanan	Iowa	19019	Low	Low	Med	Med	NOQ3
795	Buena Vista	Iowa	19021	Low	Med	Low	Low	NOQ3
796	Butler	Iowa	19023	Low	Low	Low	Low	NOQ3
797	Calhoun	Iowa	19025	Low	Med	Med	Med	NOQ3
798	Carroll	Iowa	19027	Low	Med	Med	Med	NOQ3
799	Cass	Iowa	19029	Low	Med	Med	Med	NOQ3
800	Cedar	Iowa	19031	Low	Low	Med	Med	NOQ3
801	Cerro Gordo	Iowa	19033	Low	Low	Med	Med	NOQ3
802	Cherokee	Iowa	19035	Low	Med	Med	Med	NOQ3
803	Chickasaw	Iowa	19037	Low	Low	Med	Med	NOQ3
804	Clarke	Iowa	19039	Low	Med	Med	Med	NOQ3
805	Clay	Iowa	19041	Low	Low	Med	Med	NOQ3
806	Clayton	Iowa	19043	Low	Med	Low	Low	NOQ3
807	Clinton	Iowa	19045	Low	Med	Med	Med	NOQ3
808	Crawford	Iowa	19047	Low	Med	Med	Med	NOQ3
809	Dallas	Iowa	19049	Low	Med	Med	Med	NOQ3
810	Davis	Iowa	19051	Low	Med	Med	Med	NOQ3
811	Decatur	Iowa	19053	Low	Med	Med	Med	NOQ3
812	Delaware	Iowa	19055	Low	Med	Med	Med	NOQ3
813	Des Moines	Iowa	19057	Low	Low	Med	Med	NOQ3
814	Dickinson	Iowa	19059	Low	Low	Med	Med	NOQ3
815	Dubuque	Iowa	19061	Low	Med	Med	Med	NOQ3
816	Emmet	Iowa	19063	Low	Low	Med	Med	NOQ3
817	Fayette	Iowa	19065	Low	Med	Med	Med	NOQ3
818	Floyd	Iowa	19067	Low	Low	Med	Med	NOQ3
819	Franklin	Iowa	19069	Low	Low	Low	Low	NOQ3
820	Fremont	Iowa	19071	Low	Med	Med	Med	NOQ3
821	Greene	Iowa	19073	Low	Med	Low	Low	NOQ3
822	Grundy	Iowa	19075	Low	Med	Med	Med	NOQ3
823	Guthrie	Iowa	19077	Low	Med	Low	Low	NOQ3
824	Hamilton	Iowa	19079	Low	Med	Med	Med	NOQ3
825	Hancock	Iowa	19081	Low	Low	Med	Med	NOQ3
826	Hardin	Iowa	19083	Low	Med	Med	Med	NOQ3
827	Harrison	Iowa	19085	Low	Med	Low	Low	NOQ3
828	Henry	Iowa	19087	Low	Med	Low	Low	NOQ3
829	Howard	Iowa	19089	Low	Med	Med	Med	NOQ3
830	Humboldt	Iowa	19091	Low	Low	Med	Med	NOQ3
831	Ida	Iowa	19093	Low	Med	Low	Low	NOQ3
832	Iowa	Iowa	19095	Low	Low	Med	Med	NOQ3
833	Jackson	Iowa	19097	Low	Med	Low	Low	NOQ3
834	Jasper	Iowa	19099	Low	Med	Low	Low	NOQ3
835	Jefferson	Iowa	19101	Low	Med	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
836	Johnson	Iowa	19103	Low	Low	Med	Med	Q3
837	Jones	Iowa	19105	Low	Low	Med	Med	NOQ3
838	Keokuk	Iowa	19107	Low	Med	Med	Med	NOQ3
839	Kossuth	Iowa	19109	Low	Low	Med	Med	NOQ3
840	Lee	Iowa	19111	Low	Med	Med	Med	NOQ3
841	Linn	Iowa	19113	Low	Low	Med	Med	Q3
842	Louisa	Iowa	19115	Low	Med	Med	Med	NOQ3
843	Lucas	Iowa	19117	Low	Med	Low	Low	NOQ3
844	Lyon	Iowa	19119	Low	Low	Med	Med	NOQ3
845	Madison	Iowa	19121	Low	Med	Low	Low	NOQ3
846	Mahaska	Iowa	19123	Low	Med	Low	Low	NOQ3
847	Marion	Iowa	19125	Low	Med	Med	Med	NOQ3
848	Marshall	Iowa	19127	Low	Med	Med	Med	NOQ3
849	Mills	Iowa	19129	Low	Med	Low	Low	NOQ3
850	Mitchell	Iowa	19131	Low	Low	Low	Low	NOQ3
851	Monona	Iowa	19133	Low	Med	Low	Low	NOQ3
852	Monroe	Iowa	19135	Low	Med	Low	Low	NOQ3
853	Montgomery	Iowa	19137	Low	Med	Med	Med	NOQ3
854	Muscatine	Iowa	19139	Low	High	Med	Med	NOQ3
855	Obrien	Iowa	19141	Low	Low	Med	Med	NOQ3
856	Osceola	Iowa	19143	Low	Low	Med	Med	NOQ3
857	Page	Iowa	19145	Low	Med	Med	Med	NOQ3
858	Palo Alto	Iowa	19147	Low	Low	Med	Med	NOQ3
859	Plymouth	Iowa	19149	Low	Med	Med	Med	NOQ3
860	Pocahontas	Iowa	19151	Low	Med	Med	Med	NOQ3
861	Polk	Iowa	19153	Low	Med	Med	Med	Q3
862	Pottawattamie	Iowa	19155	Low	Med	Low	Low	Q3
863	Poweshiek	Iowa	19157	Low	Med	Med	Med	NOQ3
864	Ringgold	Iowa	19159	Low	Low	Med	Med	NOQ3
865	Sac	Iowa	19161	Low	Med	Low	Low	NOQ3
866	Scott	Iowa	19163	Low	High	Med	Med	Q3
867	Shelby	Iowa	19165	Low	Med	Med	Med	NOQ3
868	Sioux	Iowa	19167	Low	Low	Low	Low	NOQ3
869	Story	Iowa	19169	Low	Med	Med	Med	Q3
870	Tama	Iowa	19171	Low	Low	Med	Med	NOQ3
871	Taylor	Iowa	19173	Low	Low	Med	Med	NOQ3
872	Union	Iowa	19175	Low	Low	Med	Med	NOQ3
873	Van Buren	Iowa	19177	Low	Med	Med	Med	NOQ3
874	Wapello	Iowa	19179	Low	Med	Med	Med	NOQ3
875	Warren	Iowa	19181	Low	Med	Med	Med	NOQ3
876	Washington	Iowa	19183	Low	Med	Low	Low	NOQ3
877	Wayne	Iowa	19185	Low	Med	Med	Med	NOQ3
878	Webster	Iowa	19187	Low	Med	Med	Med	NOQ3
879	Winnebago	Iowa	19189	Low	Low	Med	Med	NOQ3
880	Winneshiek	Iowa	19191	Low	Med	Med	Med	NOQ3
881	Woodbury	Iowa	19193	Low	Med	Med	Med	Q3
882	Worth	Iowa	19195	Low	Low	Med	Med	NOQ3
883	Wright	Iowa	19197	Low	Low	Med	Med	NOQ3
884	Allen	Kansas	20001	Low	Low	Med	Med	NOQ3
885	Anderson	Kansas	20003	Low	Low	Low	Low	NOQ3
886	Atchison	Kansas	20005	Low	Med	Med	Med	NOQ3
887	Barber	Kansas	20007	Low	Low	Low	Low	NOQ3
888	Barton	Kansas	20009	Low	Med	Med	Med	Q3
889	Bourbon	Kansas	20011	Low	Low	Low	Low	NOQ3
890	Brown	Kansas	20013	Low	Med	Med	Med	NOQ3
891	Butler	Kansas	20015	Low	Low	Med	Med	Q3
892	Chase	Kansas	20017	Low	Low	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
893	Chautauqua	Kansas	20019	Low	Med	Low	Low	NOQ3
894	Cherokee	Kansas	20021	Low	Low	Med	Med	NOQ3
895	Cheyenne	Kansas	20023	Low	Med	Low	Low	NOQ3
896	Clark	Kansas	20025	Low	Low	Low	Low	NOQ3
897	Clay	Kansas	20027	Low	Med	Med	Med	NOQ3
898	Cloud	Kansas	20029	Low	Med	Med	Med	NOQ3
899	Coffey	Kansas	20031	Low	Low	Med	Med	NOQ3
900	Comanche	Kansas	20033	Low	Low	Low	Low	NOQ3
901	Cowley	Kansas	20035	Low	Low	Med	Med	NOQ3
902	Crawford	Kansas	20037	Low	Low	Med	Med	NOQ3
903	Decatur	Kansas	20039	Low	Low	Med	Med	NOQ3
904	Dickinson	Kansas	20041	Low	Med	Med	Med	NOQ3
905	Doniphan	Kansas	20043	Low	Med	Med	Med	NOQ3
906	Douglas	Kansas	20045	Low	Med	Med	Med	Q3
907	Edwards	Kansas	20047	Low	Med	Med	Med	NOQ3
908	Elk	Kansas	20049	Low	Low	Med	Med	NOQ3
909	Ellis	Kansas	20051	Low	Med	Med	Med	NOQ3
910	Ellsworth	Kansas	20053	Low	Med	Med	Med	NOQ3
911	Finney	Kansas	20055	Low	Low	Med	Med	NOQ3
912	Ford	Kansas	20057	Low	Med	Med	Med	NOQ3
913	Franklin	Kansas	20059	Low	Low	Med	Med	NOQ3
914	Geary	Kansas	20061	Med	Low	Low	Low	NOQ3
915	Gove	Kansas	20063	Low	Low	Low	Low	NOQ3
916	Graham	Kansas	20065	Low	Low	Med	Med	NOQ3
917	Grant	Kansas	20067	Low	Low	Low	Low	NOQ3
918	Gray	Kansas	20069	Low	Low	Low	Low	NOQ3
919	Greeley	Kansas	20071	Low	Low	Low	Low	NOQ3
920	Greenwood	Kansas	20073	Low	Low	Med	Med	NOQ3
921	Hamilton	Kansas	20075	Low	High	Low	Low	NOQ3
922	Harper	Kansas	20077	Low	Low	Med	Med	NOQ3
923	Harvey	Kansas	20079	Low	Low	Med	Med	NOQ3
924	Haskell	Kansas	20081	Low	Low	Med	Med	NOQ3
925	Hodgeman	Kansas	20083	Low	Med	Med	Med	NOQ3
926	Jackson	Kansas	20085	Med	Low	Med	Med	NOQ3
927	Jefferson	Kansas	20087	Low	Med	Med	Med	NOQ3
928	Jewell	Kansas	20089	Low	Med	Med	Med	NOQ3
929	Johnson	Kansas	20091	Low	Med	Med	Med	Q3
930	Kearny	Kansas	20093	Low	Low	Med	Med	NOQ3
931	Kingman	Kansas	20095	Low	Low	Med	Med	NOQ3
932	Kiowa	Kansas	20097	Low	Low	Low	Low	NOQ3
933	Labette	Kansas	20099	Low	Low	Low	Low	NOQ3
934	Lane	Kansas	20101	Low	Low	Med	Med	NOQ3
935	Leavenworth	Kansas	20103	Low	Med	Med	Med	NOQ3
936	Lincoln	Kansas	20105	Low	Med	Low	Low	NOQ3
937	Linn	Kansas	20107	Low	Low	Low	Low	NOQ3
938	Logan	Kansas	20109	Low	Low	Low	Low	NOQ3
939	Lyon	Kansas	20111	Low	Low	Med	Med	NOQ3
940	Marion	Kansas	20115	Low	Med	Med	Med	NOQ3
941	Marshall	Kansas	20117	Med	Med	Med	Med	NOQ3
942	Mcpherson	Kansas	20113	Low	Med	Med	Med	NOQ3
943	Meade	Kansas	20119	Low	Low	Med	Med	NOQ3
944	Miami	Kansas	20121	Low	Low	Med	Med	NOQ3
945	Mitchell	Kansas	20123	Low	Med	Med	Med	NOQ3
946	Montgomery	Kansas	20125	Low	Low	Med	Med	NOQ3
947	Morris	Kansas	20127	Med	Low	Med	Med	NOQ3
948	Morton	Kansas	20129	Low	Low	Low	Low	NOQ3
949	Nemaha	Kansas	20131	Med	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
950	Neosho	Kansas	20133	Low	Low	Med	Med	NOQ3
951	Ness	Kansas	20135	Low	Low	Med	Med	NOQ3
952	Norton	Kansas	20137	Low	Low	Low	Low	NOQ3
953	Osage	Kansas	20139	Low	Low	Med	Med	NOQ3
954	Osborne	Kansas	20141	Low	Med	Med	Med	NOQ3
955	Ottawa	Kansas	20143	Low	Med	Low	Low	NOQ3
956	Pawnee	Kansas	20145	Low	Med	Med	Med	NOQ3
957	Phillips	Kansas	20147	Low	Low	Med	Med	NOQ3
958	Pottawatomie	Kansas	20149	Med	Low	Med	Med	NOQ3
959	Pratt	Kansas	20151	Low	Low	Med	Med	NOQ3
960	Rawlins	Kansas	20153	Low	Low	Med	Med	NOQ3
961	Reno	Kansas	20155	Low	Low	Med	Med	Q3
962	Republic	Kansas	20157	Low	Med	Med	Med	NOQ3
963	Rice	Kansas	20159	Low	Med	Med	Med	NOQ3
964	Riley	Kansas	20161	Med	Low	Med	Med	NOQ3
965	Rooks	Kansas	20163	Low	Med	Med	Med	NOQ3
966	Rush	Kansas	20165	Low	Med	Med	Med	NOQ3
967	Russell	Kansas	20167	Low	Med	Med	Med	NOQ3
968	Saline	Kansas	20169	Low	Med	Med	Med	Q3
969	Scott	Kansas	20171	Low	Low	Med	Med	NOQ3
970	Sedgwick	Kansas	20173	Low	Low	Med	Med	Q3
971	Seward	Kansas	20175	Low	Low	Med	Med	NOQ3
972	Shawnee	Kansas	20177	Med	Low	Med	Med	Q3
973	Sheridan	Kansas	20179	Low	Low	Low	Low	NOQ3
974	Sherman	Kansas	20181	Low	Low	Med	Med	NOQ3
975	Smith	Kansas	20183	Low	Low	Med	Med	NOQ3
976	Stafford	Kansas	20185	Low	Low	Med	Med	NOQ3
977	Stanton	Kansas	20187	Low	Low	Med	Med	NOQ3
978	Stevens	Kansas	20189	Low	Low	Low	Low	NOQ3
979	Sumner	Kansas	20191	Low	Low	Med	Med	NOQ3
980	Thomas	Kansas	20193	Low	Low	Med	Med	NOQ3
981	Trego	Kansas	20195	Low	Low	Med	Med	NOQ3
982	Wabaunsee	Kansas	20197	Med	Low	Med	Med	NOQ3
983	Wallace	Kansas	20199	Low	Low	Low	Low	NOQ3
984	Washington	Kansas	20201	Low	Med	Low	Low	NOQ3
985	Wichita	Kansas	20203	Low	Low	Med	Med	NOQ3
986	Wilson	Kansas	20205	Low	Low	Low	Low	NOQ3
987	Woodson	Kansas	20207	Low	Low	Low	Low	NOQ3
988	Wyandotte	Kansas	20209	Low	Med	Med	Med	NOQ3
989	Adair	Kentucky	21001	Low	Med	Low	Low	NOQ3
990	Allen	Kentucky	21003	Med	Low	Low	Low	NOQ3
991	Anderson	Kentucky	21005	Med	Low	Med	Med	Q3
992	Ballard	Kentucky	21007	High	High	Low	Low	Q3
993	Barren	Kentucky	21009	Med	Low	Low	Low	Q3
994	Bath	Kentucky	21011	Med	High	Low	Low	Q3
995	Bell	Kentucky	21013	Med	High	Low	Low	Q3
996	Boone	Kentucky	21015	Low	High	Med	Med	Q3
997	Bourbon	Kentucky	21017	Med	Low	Low	Low	Q3
998	Boyd	Kentucky	21019	Med	High	Low	Low	Q3
999	Boyle	Kentucky	21021	Low	Med	Med	Med	Q3
1000	Bracken	Kentucky	21023	Med	High	Low	Low	Q3
1001	Breathitt	Kentucky	21025	Med	High	Low	Low	Q3
1002	Breckinridge	Kentucky	21027	Med	Med	Low	Low	Q3
1003	Bullitt	Kentucky	21029	Med	Med	Low	Low	Q3
1004	Butler	Kentucky	21031	Med	Low	Low	Low	Q3
1005	Caldwell	Kentucky	21033	Med	Low	Low	Low	Q3
1006	Calloway	Kentucky	21035	High	Low	Med	Med	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1007	Campbell	Kentucky	21037	Low	High	Low	Low	Q3
1008	Carlisle	Kentucky	21039	High	High	Low	Low	Q3
1009	Carroll	Kentucky	21041	Low	High	Med	Med	Q3
1010	Carter	Kentucky	21043	Med	High	Low	Low	Q3
1011	Casey	Kentucky	21045	Low	Med	Low	Low	Q3
1012	Christian	Kentucky	21047	Med	Low	Low	Low	Q3
1013	Clark	Kentucky	21049	Med	Low	Low	Low	Q3
1014	Clay	Kentucky	21051	Med	High	Low	Low	Q3
1015	Clinton	Kentucky	21053	Med	High	Low	Low	NOQ3
1016	Crittenden	Kentucky	21055	Med	Low	Low	Low	Q3
1017	Cumberland	Kentucky	21057	Low	Med	Low	Low	NOQ3
1018	Daviess	Kentucky	21059	Med	Med	Low	Low	Q3
1019	Edmonson	Kentucky	21061	Med	Low	Low	Low	Q3
1020	Elliott	Kentucky	21063	Med	High	Low	Low	NOQ3
1021	Estill	Kentucky	21065	Med	High	Low	Low	Q3
1022	Fayette	Kentucky	21067	Med	Low	Med	Med	Q3
1023	Fleming	Kentucky	21069	Med	High	Low	Low	Q3
1024	Floyd	Kentucky	21071	Med	High	Low	Low	Q3
1025	Franklin	Kentucky	21073	Med	Low	Med	Med	Q3
1026	Fulton	Kentucky	21075	High	High	Low	Low	Q3
1027	Gallatin	Kentucky	21077	Low	High	Low	Low	Q3
1028	Garrard	Kentucky	21079	Med	High	Low	Low	NOQ3
1029	Grant	Kentucky	21081	Med	Low	Low	Low	NOQ3
1030	Graves	Kentucky	21083	High	Low	Low	Low	Q3
1031	Grayson	Kentucky	21085	Med	Low	Low	Low	Q3
1032	Green	Kentucky	21087	Low	Low	Low	Low	Q3
1033	Greenup	Kentucky	21089	Med	High	Low	Low	Q3
1034	Hancock	Kentucky	21091	Med	Med	Med	Med	Q3
1035	Hardin	Kentucky	21093	Med	Med	Low	Low	Q3
1036	Harlan	Kentucky	21095	Med	High	Low	Low	Q3
1037	Harrison	Kentucky	21097	Med	Low	Low	Low	Q3
1038	Hart	Kentucky	21099	Med	Low	Low	Low	Q3
1039	Henderson	Kentucky	21101	Med	Med	Low	Low	Q3
1040	Henry	Kentucky	21103	Low	Low	Med	Med	Q3
1041	Hickman	Kentucky	21105	High	High	Low	Low	Q3
1042	Hopkins	Kentucky	21107	Med	Med	Low	Low	Q3
1043	Jackson	Kentucky	21109	Med	High	Low	Low	NOQ3
1044	Jefferson	Kentucky	21111	Med	Med	Low	Low	Q3
1045	Jessamine	Kentucky	21113	Med	Low	Low	Low	Q3
1046	Johnson	Kentucky	21115	Med	High	Low	Low	Q3
1047	Kenton	Kentucky	21117	Low	High	Med	Med	Q3
1048	Knott	Kentucky	21119	Med	High	Low	Low	Q3
1049	Knox	Kentucky	21121	Med	High	Low	Low	NOQ3
1050	Larue	Kentucky	21123	Med	Med	Low	Low	Q3
1051	Laurel	Kentucky	21125	Med	High	Med	Med	NOQ3
1052	Lawrence	Kentucky	21127	Med	High	Low	Low	Q3
1053	Lee	Kentucky	21129	Med	High	Low	Low	Q3
1054	Leslie	Kentucky	21131	Med	High	Low	Low	Q3
1055	Letcher	Kentucky	21133	Med	High	Low	Low	Q3
1056	Lewis	Kentucky	21135	Med	High	Low	Low	Q3
1057	Lincoln	Kentucky	21137	Med	High	Low	Low	NOQ3
1058	Livingston	Kentucky	21139	High	Low	Low	Low	Q3
1059	Logan	Kentucky	21141	Med	Low	Low	Low	Q3
1060	Lyon	Kentucky	21143	Med	Low	Low	Low	NOQ3
1061	Madison	Kentucky	21151	Med	High	Low	Low	NOQ3
1062	Magoffin	Kentucky	21153	Med	High	Low	Low	Q3
1063	Marion	Kentucky	21155	Low	Med	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1064	Marshall	Kentucky	21157	High	Low	Med	Med	Q3
1065	Martin	Kentucky	21159	Med	High	Low	Low	Q3
1066	Mason	Kentucky	21161	Med	High	Low	Low	Q3
1067	Mccracken	Kentucky	21145	High	Low	Low	Low	Q3
1068	Mccreary	Kentucky	21147	Med	High	Low	Low	NOQ3
1069	Mclean	Kentucky	21149	Med	Med	Low	Low	Q3
1070	Meade	Kentucky	21163	Med	Med	Low	Low	Q3
1071	Menifee	Kentucky	21165	Med	High	Low	Low	NOQ3
1072	Mercer	Kentucky	21167	Med	Med	Med	Med	Q3
1073	Metcalfe	Kentucky	21169	Low	Low	Low	Low	Q3
1074	Monroe	Kentucky	21171	Med	Med	Low	Low	NOQ3
1075	Montgomery	Kentucky	21173	Med	Med	Low	Low	Q3
1076	Morgan	Kentucky	21175	Med	High	Low	Low	Q3
1077	Muhlenberg	Kentucky	21177	Med	Med	Low	Low	Q3
1078	Nelson	Kentucky	21179	Low	Med	Low	Low	Q3
1079	Nicholas	Kentucky	21181	Med	Low	Low	Low	Q3
1080	Ohio	Kentucky	21183	Med	Med	Low	Low	Q3
1081	Oldham	Kentucky	21185	Low	Low	Med	Med	Q3
1082	Owen	Kentucky	21187	Med	Low	Low	Low	Q3
1083	Owsley	Kentucky	21189	Med	High	Low	Low	NOQ3
1084	Pendleton	Kentucky	21191	Med	High	Low	Low	Q3
1085	Perry	Kentucky	21193	Med	High	Low	Low	Q3
1086	Pike	Kentucky	21195	Med	High	Low	Low	Q3
1087	Powell	Kentucky	21197	Med	High	Low	Low	Q3
1088	Pulaski	Kentucky	21199	Med	High	Low	Low	NOQ3
1089	Robertson	Kentucky	21201	Med	Low	Low	Low	Q3
1090	Rockcastle	Kentucky	21203	Med	High	Low	Low	NOQ3
1091	Rowan	Kentucky	21205	Med	High	Low	Low	Q3
1092	Russell	Kentucky	21207	Low	Med	Low	Low	Q3
1093	Scott	Kentucky	21209	Med	Low	Med	Med	Q3
1094	Shelby	Kentucky	21211	Low	Low	Med	Med	Q3
1095	Simpson	Kentucky	21213	Med	Low	Med	Med	Q3
1096	Spencer	Kentucky	21215	Low	Med	Low	Low	Q3
1097	Taylor	Kentucky	21217	Low	Med	Low	Low	Q3
1098	Todd	Kentucky	21219	Med	Low	Low	Low	Q3
1099	Trigg	Kentucky	21221	Med	Low	Low	Low	Q3
1100	Trimble	Kentucky	21223	Low	Low	Med	Med	Q3
1101	Union	Kentucky	21225	Med	Med	Low	Low	Q3
1102	Warren	Kentucky	21227	Med	Low	Med	Med	Q3
1103	Washington	Kentucky	21229	Low	Low	Low	Low	Q3
1104	Wayne	Kentucky	21231	Med	High	Low	Low	NOQ3
1105	Webster	Kentucky	21233	Med	Med	Low	Low	Q3
1106	Whitley	Kentucky	21235	Med	High	Low	Low	NOQ3
1107	Wolfe	Kentucky	21237	Med	High	Low	Low	NOQ3
1108	Woodford	Kentucky	21239	Med	Low	Low	Low	Q3
1109	Acadia	Louisiana	22001	Low	Low	High	Med	Q3
1110	Allen	Louisiana	22003	Low	Low	Med	Low	Q3
1111	Ascension	Louisiana	22005	Low	High	High	Med	Q3
1112	Assumption	Louisiana	22007	Low	High	High	Med	Q3
1113	Avoyelles	Louisiana	22009	Low	High	Med	Med	Q3
1114	Beauregard	Louisiana	22011	Low	Low	Med	Low	NOQ3
1115	Bienville	Louisiana	22013	Low	Low	Med	Med	NOQ3
1116	Bossier	Louisiana	22015	Low	Low	Med	Med	Q3
1117	Caddo	Louisiana	22017	Low	Low	Med	Med	NOQ3
1118	Calcasieu	Louisiana	22019	Low	Low	High	Med	Q3
1119	Caldwell	Louisiana	22021	Low	Med	Low	Low	NOQ3
1120	Cameron	Louisiana	22023	Low	Med	High	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1121	Catahoula	Louisiana	22025	Low	High	Med	Low	Q3
1122	Claiborne	Louisiana	22027	Low	Low	Low	Low	NOQ3
1123	Concordia	Louisiana	22029	Low	High	Med	Med	Q3
1124	De Soto	Louisiana	22031	Low	Low	Med	Med	NOQ3
1125	E Baton Rouge	Louisiana	22033	Low	High	Med	Med	Q3
1126	East Carroll	Louisiana	22035	Med	High	Med	Med	NOQ3
1127	East Feliciana	Louisiana	22037	Low	High	Med	Med	NOQ3
1128	Evangeline	Louisiana	22039	Low	Low	Med	Low	NOQ3
1129	Franklin	Louisiana	22041	Low	High	Med	Med	Q3
1130	Grant	Louisiana	22043	Low	Low	Med	Low	Q3
1131	Iberia	Louisiana	22045	Low	Med	High	Med	Q3
1132	Iberville	Louisiana	22047	Low	High	High	Low	Q3
1133	Jackson	Louisiana	22049	Low	Low	Med	Med	NOQ3
1134	Jefferson	Louisiana	22051	Low	Med	High	Med	Q3
1135	Jeff'n Davis	Louisiana	22053	Low	Low	High	Med	NOQ3
1136	La Salle	Louisiana	22059	Low	Low	Med	Low	NOQ3
1137	Lafayette	Louisiana	22055	Low	Low	High	Med	Q3
1138	Lafourche	Louisiana	22057	Low	Med	High	Low	Q3
1139	Lincoln	Louisiana	22061	Low	Low	Med	Med	NOQ3
1140	Livingston	Louisiana	22063	Low	Med	High	Med	Q3
1141	Madison	Louisiana	22065	Low	High	Med	Med	Q3
1142	Morehouse	Louisiana	22067	Med	Low	Med	Med	NOQ3
1143	Natchitoches	Louisiana	22069	Low	Low	Med	Low	Q3
1144	Orleans	Louisiana	22071	Low	Med	High	Med	Q3
1145	Ouachita	Louisiana	22073	Low	Med	Med	Med	Q3
1146	Plaquemines	Louisiana	22075	Low	Med	High	Low	Q3
1147	Pointe Coupee	Louisiana	22077	Low	High	Med	Low	Q3
1148	Rapides	Louisiana	22079	Low	Low	Med	Med	Q3
1149	Red River	Louisiana	22081	Low	Low	Low	Low	NOQ3
1150	Richland	Louisiana	22083	Low	Low	Med	Med	NOQ3
1151	Sabine	Louisiana	22085	Low	Low	Med	Low	NOQ3
1152	St Bernard	Louisiana	22087	Low	Med	High	Low	Q3
1153	St Charles	Louisiana	22089	Low	Med	High	Low	Q3
1154	St Helena	Louisiana	22091	Low	Med	Med	Med	NOQ3
1155	St James	Louisiana	22093	Low	High	High	Low	Q3
1156	St John Baptist	Louisiana	22095	Low	Med	High	Med	Q3
1157	St Landry	Louisiana	22097	Low	High	Med	Med	Q3
1158	St Martin	Louisiana	22099	Low	High	High	Low	Q3
1159	St Mary	Louisiana	22101	Low	Med	High	Low	Q3
1160	St Tammany	Louisiana	22103	Low	Med	High	Low	Q3
1161	Tangipahoa	Louisiana	22105	Low	Med	High	Med	Q3
1162	Tensas	Louisiana	22107	Low	High	Med	Med	NOQ3
1163	Terrebonne	Louisiana	22109	Low	Med	High	Low	Q3
1164	Union	Louisiana	22111	Low	Low	Med	Med	NOQ3
1165	Vermilion	Louisiana	22113	Low	Low	High	Med	Q3
1166	Vernon	Louisiana	22115	Low	Low	Med	Low	NOQ3
1167	W Baton Rouge	Louisiana	22121	Low	High	Med	Med	NOQ3
1168	Washington	Louisiana	22117	Low	Med	High	Low	NOQ3
1169	Webster	Louisiana	22119	Low	Low	Med	Med	NOQ3
1170	West Carroll	Louisiana	22123	Med	Low	Med	Med	NOQ3
1171	West Feliciana	Louisiana	22125	Low	High	Med	Low	NOQ3
1172	Winn	Louisiana	22127	Low	Low	Low	Low	NOQ3
1173	Androscoggin	Maine	23001	Med	Med	Med	Low	NOQ3
1174	Aroostook	Maine	23003	Med	Low	Low	Low	NOQ3
1175	Cumberland	Maine	23005	Med	High	Med	Low	Q3
1176	Franklin	Maine	23007	Med	High	Low	Low	NOQ3
1177	Hancock	Maine	23009	Med	Med	Med	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1178	Kennebec	Maine	23011	Med	Med	Med	Low	Q3
1179	Knox	Maine	23013	Med	Med	Med	Low	NOQ3
1180	Lincoln	Maine	23015	Med	Med	High	Low	NOQ3
1181	Oxford	Maine	23017	Med	High	Low	Low	Q3
1182	Penobscot	Maine	23019	Med	High	Med	Low	Q3
1183	Piscataquis	Maine	23021	Med	High	Low	Low	NOQ3
1184	Sagadahoc	Maine	23023	Med	Med	Med	Low	Q3
1185	Somerset	Maine	23025	Med	High	Low	Low	NOQ3
1186	Waldo	Maine	23027	Med	Med	Med	Low	Q3
1187	Washington	Maine	23029	Med	Med	Med	Low	Q3
1188	York	Maine	23031	Med	High	Med	Low	Q3
1189	Allegany	Maryland	24001	Low	High	Low	Low	Q3
1190	Anne Arundel	Maryland	24003	Low	High	Med	Med	Q3
1191	Baltimore	Maryland	24005	Med	High	Low	Low	Q3
1192	Baltimore City	Maryland	24510	Low	High	Low	Low	Q3
1193	Calvert	Maryland	24009	Low	Med	Med	Med	Q3
1194	Caroline	Maryland	24011	Low	Low	Med	Low	NOQ3
1195	Carroll	Maryland	24013	Med	High	Low	Low	Q3
1196	Cecil	Maryland	24015	Med	Med	Med	Med	Q3
1197	Charles	Maryland	24017	Low	High	Low	Low	NOQ3
1198	Dorchester	Maryland	24019	Low	Low	High	Low	Q3
1199	Frederick	Maryland	24021	Low	High	Med	Med	Q3
1200	Garrett	Maryland	24023	Low	High	Low	Low	NOQ3
1201	Harford	Maryland	24025	Med	Med	Med	Med	Q3
1202	Howard	Maryland	24027	Low	High	Low	Low	NOQ3
1203	Kent	Maryland	24029	Med	Med	Low	Low	Q3
1204	Montgomery	Maryland	24031	Low	Low	Low	Low	NOQ3
1205	Prince Georges	Maryland	24033	Low	High	Low	Low	Q3
1206	Queen Annes	Maryland	24035	Med	Low	Med	Low	Q3
1207	Somerset	Maryland	24039	Low	Low	High	Low	Q3
1208	St Marys	Maryland	24037	Low	Low	Med	Med	Q3
1209	Talbot	Maryland	24041	Low	Low	Med	Low	Q3
1210	Washington	Maryland	24043	Low	High	Low	Low	Q3
1211	Wicomico	Maryland	24045	Low	Low	High	Low	Q3
1212	Worcester	Maryland	24047	Low	Low	High	Low	Q3
1213	Barnstable	Massachusetts	25001	Med	Low	High	Low	Q3
1214	Berkshire	Massachusetts	25003	Med	High	Med	Low	Q3
1215	Bristol	Massachusetts	25005	Med	Med	High	Low	Q3
1216	Dukes	Massachusetts	25007	Med	High	High	Low	Q3
1217	Essex	Massachusetts	25009	Med	High	High	Med	Q3
1218	Franklin	Massachusetts	25011	Med	High	Med	Med	NOQ3
1219	Hampden	Massachusetts	25013	Med	High	Med	Med	Q3
1220	Hampshire	Massachusetts	25015	Med	High	Med	Low	Q3
1221	Middlesex	Massachusetts	25017	Med	Med	Med	Low	Q3
1222	Nantucket	Massachusetts	25019	Low	Med	High	Low	Q3
1223	Norfolk	Massachusetts	25021	Med	Med	High	Low	Q3
1224	Plymouth	Massachusetts	25023	Med	Med	High	Low	Q3
1225	Suffolk	Massachusetts	25025	Med	Med	High	Low	Q3
1226	Worcester	Massachusetts	25027	Med	Med	Med	Low	Q3
1227	Alcona	Michigan	26001	Low	Med	Low	Low	NOQ3
1228	Alger	Michigan	26003	Low	Med	Low	Low	NOQ3
1229	Allegan	Michigan	26005	Low	Med	Med	Med	NOQ3
1230	Alpena	Michigan	26007	Low	Low	Low	Low	Q3
1231	Antrim	Michigan	26009	Low	Med	Low	Low	NOQ3
1232	Arenac	Michigan	26011	Low	Med	Low	Low	Q3
1233	Baraga	Michigan	26013	Low	High	Low	Low	NOQ3
1234	Barry	Michigan	26015	Low	Low	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1235	Bay	Michigan	26017	Low	Med	Low	Low	Q3
1236	Benzie	Michigan	26019	Low	Med	Low	Low	NOQ3
1237	Berrien	Michigan	26021	Low	Med	Med	Med	Q3
1238	Branch	Michigan	26023	Low	Low	Med	Med	NOQ3
1239	Calhoun	Michigan	26025	Low	Low	Low	Low	Q3
1240	Cass	Michigan	26027	Low	Low	Low	Low	NOQ3
1241	Charlevoix	Michigan	26029	Low	Low	Low	Low	NOQ3
1242	Cheboygan	Michigan	26031	Low	Med	Low	Low	NOQ3
1243	Chippewa	Michigan	26033	Low	High	Low	Low	Q3
1244	Clare	Michigan	26035	Low	Low	Low	Low	Q3
1245	Clinton	Michigan	26037	Low	Low	Med	Med	Q3
1246	Crawford	Michigan	26039	Low	Low	Low	Low	NOQ3
1247	Delta	Michigan	26041	Low	Med	Low	Low	Q3
1248	Dickinson	Michigan	26043	Low	Low	Low	Low	NOQ3
1249	Eaton	Michigan	26045	Low	Low	Med	Med	NOQ3
1250	Emmet	Michigan	26047	Low	Med	Low	Low	NOQ3
1251	Genesee	Michigan	26049	Low	Med	Med	Med	Q3
1252	Gladwin	Michigan	26051	Low	Med	Low	Low	NOQ3
1253	Gogebic	Michigan	26053	Low	High	Low	Low	NOQ3
1254	Grand Traverse	Michigan	26055	Low	Med	Low	Low	NOQ3
1255	Gratiot	Michigan	26057	Low	Low	Low	Low	NOQ3
1256	Hillsdale	Michigan	26059	Low	Low	Med	Med	NOQ3
1257	Houghton	Michigan	26061	Low	High	Low	Low	NOQ3
1258	Huron	Michigan	26063	Low	Med	Low	Low	Q3
1259	Ingham	Michigan	26065	Low	Low	Med	Med	Q3
1260	Ionia	Michigan	26067	Low	Low	Med	Med	NOQ3
1261	Iosco	Michigan	26069	Low	Med	Low	Low	Q3
1262	Iron	Michigan	26071	Low	Low	Low	Low	NOQ3
1263	Isabella	Michigan	26073	Low	Low	Low	Low	Q3
1264	Jackson	Michigan	26075	Low	Low	Low	Low	NOQ3
1265	Kalamazoo	Michigan	26077	Low	Low	Med	Med	NOQ3
1266	Kalkaska	Michigan	26079	Low	Med	Low	Low	NOQ3
1267	Kent	Michigan	26081	Low	Low	Med	Med	Q3
1268	Keweenaw	Michigan	26083	Low	High	Low	Low	Q3
1269	Lake	Michigan	26085	Low	Low	Low	Low	NOQ3
1270	Lapeer	Michigan	26087	Low	Low	Low	Low	NOQ3
1271	Leelanau	Michigan	26089	Low	Med	Low	Low	NOQ3
1272	Lenawee	Michigan	26091	Low	Low	Med	Med	NOQ3
1273	Livingston	Michigan	26093	Low	Low	Med	Med	Q3
1274	Luce	Michigan	26095	Low	Med	Low	Low	NOQ3
1275	Mackinac	Michigan	26097	Low	High	Low	Low	Q3
1276	Macomb	Michigan	26099	Low	Med	Med	Med	Q3
1277	Manistee	Michigan	26101	Low	Med	Low	Low	Q3
1278	Marquette	Michigan	26103	Low	High	Low	Low	NOQ3
1279	Mason	Michigan	26105	Low	Med	Low	Low	NOQ3
1280	Mecosta	Michigan	26107	Low	Low	Low	Low	NOQ3
1281	Menominee	Michigan	26109	Low	Low	Low	Low	Q3
1282	Midland	Michigan	26111	Low	Med	Low	Low	Q3
1283	Missaukee	Michigan	26113	Low	Low	Low	Low	NOQ3
1284	Monroe	Michigan	26115	Low	Med	Med	Med	Q3
1285	Montcalm	Michigan	26117	Low	Low	Low	Low	NOQ3
1286	Montmorency	Michigan	26119	Low	Low	Low	Low	NOQ3
1287	Muskegon	Michigan	26121	Low	Med	Low	Low	Q3
1288	Newaygo	Michigan	26123	Low	Low	Low	Low	NOQ3
1289	Oakland	Michigan	26125	Low	Med	Med	Med	Q3
1290	Oceana	Michigan	26127	Low	Med	Low	Low	NOQ3
1291	Ogemaw	Michigan	26129	Low	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1292	Ontonagon	Michigan	26131	Low	High	Low	Low	NOQ3
1293	Osceola	Michigan	26133	Low	Low	Low	Low	NOQ3
1294	Oscoda	Michigan	26135	Low	Low	Low	Low	NOQ3
1295	Otsego	Michigan	26137	Low	Low	Low	Low	NOQ3
1296	Ottawa	Michigan	26139	Low	Med	Med	Med	NOQ3
1297	Presque Isle	Michigan	26141	Low	Med	Low	Low	NOQ3
1298	Roscommon	Michigan	26143	Low	Low	Low	Low	NOQ3
1299	Saginaw	Michigan	26145	Low	Med	Low	Low	Q3
1300	Sanilac	Michigan	26151	Low	Med	Low	Low	NOQ3
1301	Schoolcraft	Michigan	26153	Low	Med	Low	Low	NOQ3
1302	Shiawassee	Michigan	26155	Low	Low	Med	Med	NOQ3
1303	St Clair	Michigan	26147	Low	Med	Low	Low	Q3
1304	St Joseph	Michigan	26149	Low	Low	Low	Low	NOQ3
1305	Tuscola	Michigan	26157	Low	Med	Low	Low	NOQ3
1306	Van Buren	Michigan	26159	Low	Med	Med	Med	NOQ3
1307	Washtenaw	Michigan	26161	Low	Med	Med	Med	Q3
1308	Wayne	Michigan	26163	Low	Med	Med	Med	Q3
1309	Wexford	Michigan	26165	Low	Low	Low	Low	NOQ3
1310	Aitkin	Minnesota	27001	Low	Low	Low	Low	Q3
1311	Anoka	Minnesota	27003	Low	Low	Med	Med	Q3
1312	Becker	Minnesota	27005	Low	Low	Low	Low	Q3
1313	Beltrami	Minnesota	27007	Low	Low	Low	Low	Q3
1314	Benton	Minnesota	27009	Low	Low	Low	Low	Q3
1315	Big Stone	Minnesota	27011	Low	Low	Low	Low	Q3
1316	Blue Earth	Minnesota	27013	Low	Med	Med	Med	Q3
1317	Brown	Minnesota	27015	Low	Med	Low	Low	Q3
1318	Carlton	Minnesota	27017	Low	High	Low	Low	NOQ3
1319	Carver	Minnesota	27019	Low	Med	Med	Med	Q3
1320	Cass	Minnesota	27021	Low	Low	Low	Low	Q3
1321	Chippewa	Minnesota	27023	Low	Low	Low	Low	Q3
1322	Chisago	Minnesota	27025	Low	Low	Low	Low	NOQ3
1323	Clay	Minnesota	27027	Low	Low	Low	Low	Q3
1324	Clearwater	Minnesota	27029	Low	Low	Low	Low	NOQ3
1325	Cook	Minnesota	27031	Low	Low	Low	Low	NOQ3
1326	Cottonwood	Minnesota	27033	Low	Low	Low	Low	NOQ3
1327	Crow Wing	Minnesota	27035	Low	Low	Low	Low	NOQ3
1328	Dakota	Minnesota	27037	Low	Med	Low	Low	Q3
1329	Dodge	Minnesota	27039	Low	Low	Low	Low	NOQ3
1330	Douglas	Minnesota	27041	Low	Low	Low	Low	Q3
1331	Faribault	Minnesota	27043	Low	Med	Low	Low	NOQ3
1332	Fillmore	Minnesota	27045	Low	Med	Low	Low	NOQ3
1333	Freeborn	Minnesota	27047	Low	Low	Med	Med	NOQ3
1334	Goodhue	Minnesota	27049	Low	Med	Low	Low	Q3
1335	Grant	Minnesota	27051	Low	Low	Low	Low	Q3
1336	Hennepin	Minnesota	27053	Low	Med	Med	Med	Q3
1337	Houston	Minnesota	27055	Low	Med	Low	Low	Q3
1338	Hubbard	Minnesota	27057	Low	Low	Low	Low	NOQ3
1339	Isanti	Minnesota	27059	Low	Low	Low	Low	NOQ3
1340	Itasca	Minnesota	27061	Low	Low	Low	Low	Q3
1341	Jackson	Minnesota	27063	Low	Low	Low	Low	NOQ3
1342	Kanabec	Minnesota	27065	Low	Low	Low	Low	NOQ3
1343	Kandiyohi	Minnesota	27067	Low	Low	Low	Low	Q3
1344	Kittson	Minnesota	27069	Low	Low	Low	Low	Q3
1345	Koochiching	Minnesota	27071	Low	Low	Low	Low	NOQ3
1346	Lac Qui Parle	Minnesota	27073	Low	Low	Low	Low	Q3
1347	Lake	Minnesota	27075	Low	Low	Low	Low	NOQ3
1348	Lake Of Woods	Minnesota	27077	Low	Low	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1349	Le Sueur	Minnesota	27079	Low	Med	Low	Low	Q3
1350	Lincoln	Minnesota	27081	Low	Low	Low	Low	Q3
1351	Lyon	Minnesota	27083	Low	Low	Med	Med	Q3
1352	Mahnomen	Minnesota	27087	Low	Low	Low	Low	Q3
1353	Marshall	Minnesota	27089	Low	Low	Low	Low	Q3
1354	Martin	Minnesota	27091	Low	Low	Low	Low	NOQ3
1355	Mcleod	Minnesota	27085	Low	Low	Low	Low	Q3
1356	Meeker	Minnesota	27093	Low	Low	Low	Low	NOQ3
1357	Mille Lacs	Minnesota	27095	Low	Low	Low	Low	NOQ3
1358	Morrison	Minnesota	27097	Low	Low	Low	Low	Q3
1359	Mower	Minnesota	27099	Low	Low	Med	Med	Q3
1360	Murray	Minnesota	27101	Low	Low	Med	Med	Q3
1361	Nicollet	Minnesota	27103	Low	Med	Low	Low	Q3
1362	Nobles	Minnesota	27105	Low	Low	Low	Low	NOQ3
1363	Norman	Minnesota	27107	Low	Low	Low	Low	Q3
1364	Olmsted	Minnesota	27109	Low	Med	Med	Med	Q3
1365	Otter Tail	Minnesota	27111	Low	Low	Low	Low	Q3
1366	Pennington	Minnesota	27113	Low	Low	Low	Low	Q3
1367	Pine	Minnesota	27115	Low	Low	Low	Low	NOQ3
1368	Pipestone	Minnesota	27117	Low	Low	Low	Low	NOQ3
1369	Polk	Minnesota	27119	Low	Low	Low	Low	Q3
1370	Pope	Minnesota	27121	Low	Low	Low	Low	Q3
1371	Ramsey	Minnesota	27123	Low	Low	Med	Med	Q3
1372	Red Lake	Minnesota	27125	Low	Low	Low	Low	Q3
1373	Redwood	Minnesota	27127	Low	Med	Low	Low	Q3
1374	Renville	Minnesota	27129	Low	Med	Low	Low	Q3
1375	Rice	Minnesota	27131	Low	Low	Low	Low	Q3
1376	Rock	Minnesota	27133	Low	Low	Low	Low	NOQ3
1377	Roseau	Minnesota	27135	Low	Low	Low	Low	Q3
1378	Scott	Minnesota	27139	Low	Med	Low	Low	Q3
1379	Sherburne	Minnesota	27141	Low	Low	Low	Low	Q3
1380	Sibley	Minnesota	27143	Low	Med	Med	Med	Q3
1381	St Louis	Minnesota	27137	Low	High	Low	Low	Q3
1382	Stearns	Minnesota	27145	Low	Low	Low	Low	Q3
1383	Steele	Minnesota	27147	Low	Low	Med	Med	NOQ3
1384	Stevens	Minnesota	27149	Low	Low	Low	Low	Q3
1385	Swift	Minnesota	27151	Low	Low	Low	Low	Q3
1386	Todd	Minnesota	27153	Low	Low	Low	Low	Q3
1387	Traverse	Minnesota	27155	Low	Low	Low	Low	Q3
1388	Wabasha	Minnesota	27157	Low	Med	Low	Low	Q3
1389	Wadena	Minnesota	27159	Low	Low	Low	Low	Q3
1390	Waseca	Minnesota	27161	Low	Med	Med	Med	NOQ3
1391	Washington	Minnesota	27163	Low	Low	Low	Low	Q3
1392	Watonwan	Minnesota	27165	Low	Low	Med	Med	NOQ3
1393	Wilkin	Minnesota	27167	Low	Low	Low	Low	Q3
1394	Winona	Minnesota	27169	Low	Med	Low	Low	Q3
1395	Wright	Minnesota	27171	Low	Low	Low	Low	Q3
1396	Yellow Medicin	Minnesota	27173	Low	Low	Low	Low	Q3
1397	Adams	Mississippi	28001	Low	High	Med	Low	NOQ3
1398	Alcorn	Mississippi	28003	Med	Low	Med	Med	NOQ3
1399	Amite	Mississippi	28005	Low	High	Med	Low	NOQ3
1400	Attala	Mississippi	28007	Med	Low	Med	Med	NOQ3
1401	Benton	Mississippi	28009	Med	Low	Low	Low	NOQ3
1402	Bolivar	Mississippi	28011	Med	High	Med	Med	Q3
1403	Calhoun	Mississippi	28013	Med	Low	Low	Low	NOQ3
1404	Carroll	Mississippi	28015	Med	High	Low	Low	NOQ3
1405	Chickasaw	Mississippi	28017	Med	Low	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1406	Choctaw	Mississippi	28019	Med	Low	Med	Low	NOQ3
1407	Claiborne	Mississippi	28021	Low	High	Med	Med	Q3
1408	Clarke	Mississippi	28023	Low	High	Med	Med	NOQ3
1409	Clay	Mississippi	28025	Med	Low	Med	Med	NOQ3
1410	Coahoma	Mississippi	28027	Med	High	Med	Med	NOQ3
1411	Copiah	Mississippi	28029	Low	Med	Med	Med	NOQ3
1412	Covington	Mississippi	28031	Low	Med	Med	Med	NOQ3
1413	De Soto	Mississippi	28033	High	High	Med	Med	Q3
1414	Forrest	Mississippi	28035	Low	Med	High	Med	Q3
1415	Franklin	Mississippi	28037	Low	High	Med	Low	NOQ3
1416	George	Mississippi	28039	Low	Med	High	Low	NOQ3
1417	Greene	Mississippi	28041	Low	Med	High	Low	NOQ3
1418	Grenada	Mississippi	28043	Med	High	Med	Med	NOQ3
1419	Hancock	Mississippi	28045	Low	Low	High	Med	Q3
1420	Harrison	Mississippi	28047	Low	Low	High	Med	Q3
1421	Hinds	Mississippi	28049	Low	High	Med	Med	Q3
1422	Holmes	Mississippi	28051	Med	High	Low	Low	NOQ3
1423	Humphreys	Mississippi	28053	Med	Low	Med	Med	NOQ3
1424	Issaquena	Mississippi	28055	Med	High	Med	Med	NOQ3
1425	Itawamba	Mississippi	28057	Med	Med	Low	Low	Q3
1426	Jackson	Mississippi	28059	Low	Low	High	Med	Q3
1427	Jasper	Mississippi	28061	Low	High	Med	Med	NOQ3
1428	Jefferson	Mississippi	28063	Low	High	Med	Low	NOQ3
1429	Jeff'n Davis	Mississippi	28065	Low	Med	Med	Med	NOQ3
1430	Jones	Mississippi	28067	Low	Med	Med	Med	NOQ3
1431	Kemper	Mississippi	28069	Low	Low	Med	Low	NOQ3
1432	Lafayette	Mississippi	28071	Med	Low	Low	Low	NOQ3
1433	Lamar	Mississippi	28073	Low	Med	High	Med	NOQ3
1434	Lauderdale	Mississippi	28075	Low	Low	Med	Med	Q3
1435	Lawrence	Mississippi	28077	Low	Med	Med	Med	NOQ3
1436	Leake	Mississippi	28079	Low	Low	Med	Med	NOQ3
1437	Lee	Mississippi	28081	Med	Low	Med	Med	Q3
1438	Leflore	Mississippi	28083	Med	Low	Med	Med	Q3
1439	Lincoln	Mississippi	28085	Low	Med	Med	Med	NOQ3
1440	Lowndes	Mississippi	28087	Med	Low	Med	Med	Q3
1441	Madison	Mississippi	28089	Low	High	Med	Med	Q3
1442	Marion	Mississippi	28091	Low	Med	Med	Med	NOQ3
1443	Marshall	Mississippi	28093	Med	Low	Low	Low	NOQ3
1444	Monroe	Mississippi	28095	Med	Low	Med	Med	NOQ3
1445	Montgomery	Mississippi	28097	Med	Low	Med	Med	NOQ3
1446	Neshoba	Mississippi	28099	Low	Low	Med	Med	NOQ3
1447	Newton	Mississippi	28101	Low	High	Med	Med	NOQ3
1448	Noxubee	Mississippi	28103	Low	Low	Med	Low	NOQ3
1449	Oktibbeha	Mississippi	28105	Med	Low	Med	Low	NOQ3
1450	Panola	Mississippi	28107	Med	High	Low	Low	NOQ3
1451	Pearl River	Mississippi	28109	Low	Med	High	Med	Q3
1452	Perry	Mississippi	28111	Low	Med	High	Low	NOQ3
1453	Pike	Mississippi	28113	Low	Med	Med	Med	NOQ3
1454	Pontotoc	Mississippi	28115	Med	Low	Med	Med	NOQ3
1455	Prentiss	Mississippi	28117	Med	Low	Med	Med	Q3
1456	Quitman	Mississippi	28119	Med	Low	Low	Low	NOQ3
1457	Rankin	Mississippi	28121	Low	High	Med	Med	Q3
1458	Scott	Mississippi	28123	Low	High	Med	Med	NOQ3
1459	Sharkey	Mississippi	28125	Med	Low	Med	Med	NOQ3
1460	Simpson	Mississippi	28127	Low	Med	Med	Med	NOQ3
1461	Smith	Mississippi	28129	Low	High	Med	Med	NOQ3
1462	Stone	Mississippi	28131	Low	Med	High	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1463	Sunflower	Mississippi	28133	Med	Low	Low	Low	NOQ3
1464	Tallahatchie	Mississippi	28135	Med	High	Med	Med	NOQ3
1465	Tate	Mississippi	28137	Med	High	Low	Low	NOQ3
1466	Tippah	Mississippi	28139	Med	Low	Med	Med	NOQ3
1467	Tishomingo	Mississippi	28141	Med	Med	Med	Med	NOQ3
1468	Tunica	Mississippi	28143	Med	High	Low	Low	Q3
1469	Union	Mississippi	28145	Med	Low	Med	Med	NOQ3
1470	Walthall	Mississippi	28147	Low	Med	Med	Med	NOQ3
1471	Warren	Mississippi	28149	Low	High	Med	Med	Q3
1472	Washington	Mississippi	28151	Med	High	Med	Med	Q3
1473	Wayne	Mississippi	28153	Low	High	Med	Low	NOQ3
1474	Webster	Mississippi	28155	Med	Low	Low	Low	NOQ3
1475	Wilkinson	Mississippi	28157	Low	High	Med	Low	NOQ3
1476	Winston	Mississippi	28159	Low	Low	Med	Low	NOQ3
1477	Yalobusha	Mississippi	28161	Med	High	Low	Low	NOQ3
1478	Yazoo	Mississippi	28163	Med	High	Med	Med	Q3
1479	Adair	Missouri	29001	Low	Med	Low	Low	NOQ3
1480	Andrew	Missouri	29003	Low	Med	Med	Med	NOQ3
1481	Atchison	Missouri	29005	Low	Med	Low	Low	NOQ3
1482	Audrain	Missouri	29007	Low	Med	Low	Low	NOQ3
1483	Barry	Missouri	29009	Low	Low	Low	Low	NOQ3
1484	Barton	Missouri	29011	Low	Low	Med	Med	NOQ3
1485	Bates	Missouri	29013	Low	Low	Low	Low	NOQ3
1486	Benton	Missouri	29015	Low	Low	Med	Med	NOQ3
1487	Bollinger	Missouri	29017	High	Low	Low	Low	NOQ3
1488	Boone	Missouri	29019	Low	Med	Med	Med	Q3
1489	Buchanan	Missouri	29021	Low	Med	Med	Med	Q3
1490	Butler	Missouri	29023	High	Low	Low	Low	NOQ3
1491	Caldwell	Missouri	29025	Low	Med	Low	Low	NOQ3
1492	Callaway	Missouri	29027	Med	Low	Med	Med	NOQ3
1493	Camden	Missouri	29029	Low	Low	Low	Low	NOQ3
1494	Cape Girardeau	Missouri	29031	High	Low	Med	Med	Q3
1495	Carroll	Missouri	29033	Low	Med	Low	Low	NOQ3
1496	Carter	Missouri	29035	Med	Low	Low	Low	NOQ3
1497	Cass	Missouri	29037	Low	Med	Med	Med	NOQ3
1498	Cedar	Missouri	29039	Low	Low	Low	Low	NOQ3
1499	Chariton	Missouri	29041	Low	Med	Low	Low	NOQ3
1500	Christian	Missouri	29043	Med	Low	Med	Med	NOQ3
1501	Clark	Missouri	29045	Low	Low	Low	Low	NOQ3
1502	Clay	Missouri	29047	Low	Med	Med	Med	Q3
1503	Clinton	Missouri	29049	Low	Med	Med	Med	NOQ3
1504	Cole	Missouri	29051	Low	Med	Low	Low	Q3
1505	Cooper	Missouri	29053	Low	Med	Low	Low	NOQ3
1506	Crawford	Missouri	29055	Med	Low	Low	Low	NOQ3
1507	Dade	Missouri	29057	Low	Low	Low	Low	NOQ3
1508	Dallas	Missouri	29059	Low	Low	Low	Low	NOQ3
1509	Daviess	Missouri	29061	Low	Med	Low	Low	NOQ3
1510	De Kalb	Missouri	29063	Low	Med	Med	Med	NOQ3
1511	Dent	Missouri	29065	Med	Low	Low	Low	NOQ3
1512	Douglas	Missouri	29067	Med	Low	Low	Low	NOQ3
1513	Dunklin	Missouri	29069	High	Low	Med	Med	NOQ3
1514	Franklin	Missouri	29071	Med	Med	Low	Low	Q3
1515	Gasconade	Missouri	29073	Med	Low	Low	Low	NOQ3
1516	Gentry	Missouri	29075	Low	Med	Low	Low	NOQ3
1517	Greene	Missouri	29077	Low	Low	Med	Med	Q3
1518	Grundy	Missouri	29079	Low	Med	Low	Low	NOQ3
1519	Harrison	Missouri	29081	Low	Med	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1520	Henry	Missouri	29083	Low	Low	Low	Low	NOQ3
1521	Hickory	Missouri	29085	Low	Low	Low	Low	NOQ3
1522	Holt	Missouri	29087	Low	Med	Low	Low	NOQ3
1523	Howard	Missouri	29089	Low	Med	Low	Low	NOQ3
1524	Howell	Missouri	29091	Med	Low	Med	Med	NOQ3
1525	Iron	Missouri	29093	Med	Low	Low	Low	NOQ3
1526	Jackson	Missouri	29095	Low	Med	Med	Med	Q3
1527	Jasper	Missouri	29097	Low	Low	Med	Med	NOQ3
1528	Jefferson	Missouri	29099	Med	Med	Med	Med	Q3
1529	Johnson	Missouri	29101	Low	Low	Low	Low	NOQ3
1530	Knox	Missouri	29103	Low	Med	Low	Low	NOQ3
1531	Laclede	Missouri	29105	Med	Low	Low	Low	NOQ3
1532	Lafayette	Missouri	29107	Low	Med	Low	Low	NOQ3
1533	Lawrence	Missouri	29109	Low	Low	Low	Low	NOQ3
1534	Lewis	Missouri	29111	Low	Med	Low	Low	NOQ3
1535	Lincoln	Missouri	29113	Med	High	Low	Low	NOQ3
1536	Linn	Missouri	29115	Low	Med	Low	Low	NOQ3
1537	Livingston	Missouri	29117	Low	Low	Low	Low	NOQ3
1538	Macon	Missouri	29121	Low	Med	Low	Low	NOQ3
1539	Madison	Missouri	29123	Med	Low	Low	Low	NOQ3
1540	Maries	Missouri	29125	Med	Low	Low	Low	NOQ3
1541	Marion	Missouri	29127	Low	Med	Low	Low	NOQ3
1542	Mcdonald	Missouri	29119	Low	Low	Low	Low	NOQ3
1543	Mercer	Missouri	29129	Low	Med	Low	Low	NOQ3
1544	Miller	Missouri	29131	Med	Low	Med	Med	NOQ3
1545	Mississippi	Missouri	29133	High	High	Med	Med	NOQ3
1546	Moniteau	Missouri	29135	Low	Med	Med	Med	NOQ3
1547	Monroe	Missouri	29137	Low	Med	Low	Low	NOQ3
1548	Montgomery	Missouri	29139	Med	Low	Low	Low	NOQ3
1549	Morgan	Missouri	29141	Low	Low	Med	Med	NOQ3
1550	New Madrid	Missouri	29143	High	High	Low	Low	NOQ3
1551	Newton	Missouri	29145	Low	Low	Med	Med	NOQ3
1552	Nodaway	Missouri	29147	Low	Med	Med	Med	NOQ3
1553	Oregon	Missouri	29149	Med	Low	Low	Low	NOQ3
1554	Osage	Missouri	29151	Med	Low	Low	Low	NOQ3
1555	Ozark	Missouri	29153	Med	Low	Med	Med	NOQ3
1556	Pemiscot	Missouri	29155	High	High	Med	Med	NOQ3
1557	Perry	Missouri	29157	High	Low	Med	Med	NOQ3
1558	Pettis	Missouri	29159	Low	Low	Med	Med	NOQ3
1559	Phelps	Missouri	29161	Med	Low	Low	Low	NOQ3
1560	Pike	Missouri	29163	Med	High	Low	Low	NOQ3
1561	Platte	Missouri	29165	Low	Med	Med	Med	Q3
1562	Polk	Missouri	29167	Low	Low	Low	Low	NOQ3
1563	Pulaski	Missouri	29169	Med	Low	Low	Low	NOQ3
1564	Putnam	Missouri	29171	Low	Med	Low	Low	NOQ3
1565	Ralls	Missouri	29173	Low	High	Low	Low	NOQ3
1566	Randolph	Missouri	29175	Low	Med	Low	Low	NOQ3
1567	Ray	Missouri	29177	Low	Med	Med	Med	NOQ3
1568	Reynolds	Missouri	29179	Med	Low	Low	Low	NOQ3
1569	Ripley	Missouri	29181	Med	Low	Low	Low	NOQ3
1570	Saline	Missouri	29195	Low	Med	Low	Low	NOQ3
1571	Schuyler	Missouri	29197	Low	Med	Low	Low	NOQ3
1572	Scotland	Missouri	29199	Low	Med	Low	Low	NOQ3
1573	Scott	Missouri	29201	High	High	Med	Med	NOQ3
1574	Shannon	Missouri	29203	Med	Low	Low	Low	NOQ3
1575	Shelby	Missouri	29205	Low	Med	Low	Low	NOQ3
1576	St Charles	Missouri	29183	Med	High	Med	Med	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1577	St Clair	Missouri	29185	Low	Low	Low	Low	NOQ3
1578	St Francois	Missouri	29187	Med	Low	Med	Med	NOQ3
1579	St Louis City	Missouri	29510	Med	Med	Med	Med	Q3
1580	St Louis County	Missouri	29189	Med	Med	Med	Med	Q3
1581	Ste Genevieve	Missouri	29186	Med	Low	Low	Low	NOQ3
1582	Stoddard	Missouri	29207	High	Low	Low	Low	NOQ3
1583	Stone	Missouri	29209	Low	Low	Low	Low	NOQ3
1584	Sullivan	Missouri	29211	Low	Med	Low	Low	NOQ3
1585	Taney	Missouri	29213	Med	Low	Low	Low	NOQ3
1586	Texas	Missouri	29215	Med	Low	Low	Low	NOQ3
1587	Vernon	Missouri	29217	Low	Low	Low	Low	NOQ3
1588	Warren	Missouri	29219	Med	Med	Low	Low	NOQ3
1589	Washington	Missouri	29221	Med	Low	Low	Low	NOQ3
1590	Wayne	Missouri	29223	High	Low	Low	Low	NOQ3
1591	Webster	Missouri	29225	Med	Low	Low	Low	NOQ3
1592	Worth	Missouri	29227	Low	Low	Med	Med	NOQ3
1593	Wright	Missouri	29229	Med	Low	Low	Low	NOQ3
1594	Beaverhead	Montana	30001	High	High	Low	Low	NOQ3
1595	Big Horn	Montana	30003	Med	High	Low	Low	NOQ3
1596	Blaine	Montana	30005	Low	High	Low	Low	NOQ3
1597	Broadwater	Montana	30007	Med	High	Low	Low	Q3
1598	Carbon	Montana	30009	Med	High	Low	Low	Q3
1599	Carter	Montana	30011	Low	High	Low	Low	NOQ3
1600	Cascade	Montana	30013	Med	High	Low	Low	Q3
1601	Chouteau	Montana	30015	Med	High	Low	Low	NOQ3
1602	Custer	Montana	30017	Low	Low	Low	Low	Q3
1603	Daniels	Montana	30019	Med	Low	Low	Low	NOQ3
1604	Dawson	Montana	30021	Low	High	Low	Low	Q3
1605	Deer Lodge	Montana	30023	Med	Med	Low	Low	Q3
1606	Fallon	Montana	30025	Low	High	Low	Low	NOQ3
1607	Fergus	Montana	30027	Low	High	Low	Low	NOQ3
1608	Flathead	Montana	30029	Med	High	Low	Low	Q3
1609	Gallatin	Montana	30031	High	High	Low	Low	NOQ3
1610	Garfield	Montana	30033	Med	High	Low	Low	NOQ3
1611	Glacier	Montana	30035	Med	High	Low	Low	NOQ3
1612	Golden Valley	Montana	30037	Low	High	Low	Low	NOQ3
1613	Granite	Montana	30039	Med	Med	Low	Low	NOQ3
1614	Hill	Montana	30041	Low	High	Low	Low	NOQ3
1615	Jefferson	Montana	30043	Med	High	Low	Low	NOQ3
1616	Judith Basin	Montana	30045	Med	High	Low	Low	NOQ3
1617	Lake	Montana	30047	High	Low	Low	Low	NOQ3
1618	Lewis & Clark	Montana	30049	Med	High	Low	Low	NOQ3
1619	Liberty	Montana	30051	Med	High	Low	Low	NOQ3
1620	Lincoln	Montana	30053	Med	Low	Low	Low	Q3
1621	Madison	Montana	30057	High	High	Low	Low	NOQ3
1622	Mccone	Montana	30055	Med	High	Low	Low	NOQ3
1623	Meagher	Montana	30059	Med	High	Low	Low	Q3
1624	Mineral	Montana	30061	Med	Med	Low	Low	NOQ3
1625	Missoula	Montana	30063	Med	Med	Low	Low	NOQ3
1626	Musselshell	Montana	30065	Low	High	Low	Low	Q3
1627	Park	Montana	30067	Med	High	Low	Low	Q3
1628	Petroleum	Montana	30069	Low	High	Low	Low	NOQ3
1629	Phillips	Montana	30071	Low	High	Low	Low	NOQ3
1630	Pondera	Montana	30073	Med	High	Low	Low	NOQ3
1631	Powder River	Montana	30075	Med	High	Low	Low	NOQ3
1632	Powell	Montana	30077	Med	High	Low	Low	NOQ3
1633	Prairie	Montana	30079	Low	High	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1634	Ravalli	Montana	30081	Med	Med	Low	Low	Q3
1635	Richland	Montana	30083	Low	High	Low	Low	Q3
1636	Roosevelt	Montana	30085	Med	High	Low	Low	NOQ3
1637	Rosebud	Montana	30087	Med	High	Low	Low	NOQ3
1638	Sanders	Montana	30089	Med	Med	Low	Low	Q3
1639	Sheridan	Montana	30091	Med	Low	Low	Low	NOQ3
1640	Silver Bow	Montana	30093	Med	Med	Low	Low	NOQ3
1641	Stillwater	Montana	30095	Med	High	Low	Low	NOQ3
1642	Sweet Grass	Montana	30097	Med	High	Low	Low	Q3
1643	Teton	Montana	30099	Med	High	Low	Low	NOQ3
1644	Toole	Montana	30101	Med	High	Low	Low	NOQ3
1645	Treasure	Montana	30103	Low	High	Low	Low	Q3
1646	Valley	Montana	30105	Med	High	Low	Low	NOQ3
1647	Wheatland	Montana	30107	Med	High	Low	Low	Q3
1648	Wibaux	Montana	30109	Low	High	Low	Low	NOQ3
1649	Yellowstone	Montana	30111	Low	High	Low	Low	Q3
1650	Y'stone Nat'l	Montana	30113	High	High	Low	Low	NOQ3
1651	Adams	Nebraska	31001	Low	Low	Med	Med	NOQ3
1652	Antelope	Nebraska	31003	Low	Low	Med	Med	NOQ3
1653	Arthur	Nebraska	31005	Low	Low	Low	Low	NOQ3
1654	Banner	Nebraska	31007	Low	Low	Low	Low	NOQ3
1655	Blaine	Nebraska	31009	Low	Low	Low	Low	NOQ3
1656	Boone	Nebraska	31011	Low	Low	Med	Med	NOQ3
1657	Box Butte	Nebraska	31013	Low	Low	Med	Med	NOQ3
1658	Boyd	Nebraska	31015	Low	High	Low	Low	NOQ3
1659	Brown	Nebraska	31017	Low	High	Low	Low	NOQ3
1660	Buffalo	Nebraska	31019	Low	Low	Med	Med	NOQ3
1661	Burt	Nebraska	31021	Low	Low	Med	Med	NOQ3
1662	Butler	Nebraska	31023	Low	Low	Med	Med	NOQ3
1663	Cass	Nebraska	31025	Low	Med	Med	Med	Q3
1664	Cedar	Nebraska	31027	Low	High	Low	Low	NOQ3
1665	Chase	Nebraska	31029	Low	Low	Low	Low	NOQ3
1666	Cherry	Nebraska	31031	Low	Low	Low	Low	NOQ3
1667	Cheyenne	Nebraska	31033	Low	Low	Med	Med	NOQ3
1668	Clay	Nebraska	31035	Low	Low	Med	Med	NOQ3
1669	Colfax	Nebraska	31037	Low	Low	Med	Med	NOQ3
1670	Cuming	Nebraska	31039	Low	Low	Med	Med	NOQ3
1671	Custer	Nebraska	31041	Low	Low	Low	Low	NOQ3
1672	Dakota	Nebraska	31043	Low	Low	Low	Low	NOQ3
1673	Dawes	Nebraska	31045	Low	High	Low	Low	NOQ3
1674	Dawson	Nebraska	31047	Low	Low	Med	Med	NOQ3
1675	Deuel	Nebraska	31049	Low	Low	Med	Med	NOQ3
1676	Dixon	Nebraska	31051	Low	Low	Med	Med	NOQ3
1677	Dodge	Nebraska	31053	Low	Low	Med	Med	Q3
1678	Douglas	Nebraska	31055	Low	Low	Med	Med	Q3
1679	Dundy	Nebraska	31057	Low	Med	Low	Low	NOQ3
1680	Fillmore	Nebraska	31059	Low	Low	Med	Med	NOQ3
1681	Franklin	Nebraska	31061	Low	Low	Med	Med	NOQ3
1682	Frontier	Nebraska	31063	Low	Low	Low	Low	NOQ3
1683	Furnas	Nebraska	31065	Low	Low	Med	Med	NOQ3
1684	Gage	Nebraska	31067	Low	Med	Med	Med	NOQ3
1685	Garden	Nebraska	31069	Low	Low	Low	Low	NOQ3
1686	Garfield	Nebraska	31071	Low	Low	Low	Low	NOQ3
1687	Gosper	Nebraska	31073	Low	Low	Med	Med	NOQ3
1688	Grant	Nebraska	31075	Low	Low	Low	Low	NOQ3
1689	Greeley	Nebraska	31077	Low	Low	Med	Med	NOQ3
1690	Hall	Nebraska	31079	Low	Low	High	Hig	h Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1691	Hamilton	Nebraska	31081	Low	Low	Med	Med	NOQ3
1692	Harlan	Nebraska	31083	Low	Low	Low	Low	NOQ3
1693	Hayes	Nebraska	31085	Low	Low	Low	Low	NOQ3
1694	Hitchcock	Nebraska	31087	Low	Low	Med	Med	NOQ3
1695	Holt	Nebraska	31089	Low	High	Low	Low	NOQ3
1696	Hooker	Nebraska	31091	Low	Low	Low	Low	NOQ3
1697	Howard	Nebraska	31093	Low	Low	Med	Med	NOQ3
1698	Jefferson	Nebraska	31095	Low	Med	Med	Med	NOQ3
1699	Johnson	Nebraska	31097	Low	Low	Med	Med	NOQ3
1700	Kearney	Nebraska	31099	Low	Low	Med	Med	NOQ3
1701	Keith	Nebraska	31101	Low	Low	Med	Med	NOQ3
1702	Keya Paha	Nebraska	31103	Low	High	Low	Low	NOQ3
1703	Kimball	Nebraska	31105	Low	Low	Med	Med	NOQ3
1704	Knox	Nebraska	31107	Low	High	Med	Med	NOQ3
1705	Lancaster	Nebraska	31109	Low	Low	Med	Med	Q3
1706	Lincoln	Nebraska	31111	Low	Low	Low	Low	NOQ3
1707	Logan	Nebraska	31113	Low	Low	Low	Low	NOQ3
1708	Loup	Nebraska	31115	Low	Low	Low	Low	NOQ3
1709	Madison	Nebraska	31119	Low	Low	Med	Med	NOQ3
1710	Mcpherson	Nebraska	31117	Low	Low	Low	Low	NOQ3
1711	Merrick	Nebraska	31121	Low	Low	Med	Med	NOQ3
1712	Morrill	Nebraska	31123	Low	Low	Med	Med	NOQ3
1713	Nance	Nebraska	31125	Low	Low	Med	Med	NOQ3
1714	Nemaha	Nebraska	31127	Low	Med	Med	Med	NOQ3
1715	Nuckolls	Nebraska	31129	Low	Low	Med	Med	NOQ3
1716	Otoe	Nebraska	31131	Low	Med	Med	Med	NOQ3
1717	Pawnee	Nebraska	31133	Low	Low	Med	Med	NOQ3
1718	Perkins	Nebraska	31135	Low	Low	Med	Med	NOQ3
1719	Phelps	Nebraska	31137	Low	Low	Med	Med	NOQ3
1720	Pierce	Nebraska	31139	Low	High	Med	Med	NOQ3
1721	Platte	Nebraska	31141	Low	Low	Med	Med	Q3
1722	Polk	Nebraska	31143	Low	Low	Med	Med	NOQ3
1723	Red Willow	Nebraska	31145	Low	Low	Med	Med	NOQ3
1724	Richardson	Nebraska	31147	Low	Med	Low	Low	NOQ3
1725	Rock	Nebraska	31149	Low	High	Low	Low	NOQ3
1726	Saline	Nebraska	31151	Low	Low	Med	Med	NOQ3
1727	Sarpy	Nebraska	31153	Low	Low	Med	Med	Q3
1728	Saunders	Nebraska	31155	Low	Low	Med	Med	Q3
1729	Scotts Bluff	Nebraska	31157	Low	Low	Med	Med	NOQ3
1730	Seward	Nebraska	31159	Low	Low	Med	Med	NOQ3
1731	Sheridan	Nebraska	31161	Low	High	Low	Low	NOQ3
1732	Sherman	Nebraska	31163	Low	Low	Med	Med	NOQ3
1733	Sioux	Nebraska	31165	Low	High	Low	Low	NOQ3
1734	Stanton	Nebraska	31167	Low	Low	Med	Med	NOQ3
1735	Thayer	Nebraska	31169	Low	Med	Med	Med	NOQ3
1736	Thomas	Nebraska	31171	Low	Low	Low	Low	NOQ3
1737	Thurston	Nebraska	31173	Low	Low	Med	Med	NOQ3
1738	Valley	Nebraska	31175	Low	Low	Med	Med	NOQ3
1739	Washington	Nebraska	31177	Low	Low	Med	Med	NOQ3
1740	Wayne	Nebraska	31179	Low	Low	Med	Med	NOQ3
1741	Webster	Nebraska	31181	Low	Low	Med	Med	NOQ3
1742	Wheeler	Nebraska	31183	Low	Low	Low	Low	NOQ3
1743	York	Nebraska	31185	Low	Low	Med	Med	NOQ3
1744	Carson City	Nevada	32510	High	High	Low	Low	Q3
1745	Churchill	Nevada	32001	Med	High	Low	Low	NOQ3
1746	Clark	Nevada	32003	Med	Med	Low	Low	Q3
1747	Douglas	Nevada	32005	High	Med	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1748	Elko	Nevada	32007	Med	High	Low	Low	NOQ3
1749	Esmeralda	Nevada	32009	High	High	Low	Low	NOQ3
1750	Eureka	Nevada	32011	Med	High	Low	Low	NOQ3
1751	Humboldt	Nevada	32013	Med	High	Low	Low	NOQ3
1752	Lander	Nevada	32015	Med	High	Low	Low	NOQ3
1753	Lincoln	Nevada	32017	Med	Med	Low	Low	NOQ3
1754	Lyon	Nevada	32019	High	Med	Low	Low	NOQ3
1755	Mineral	Nevada	32021	High	High	Low	Low	NOQ3
1756	Nye	Nevada	32023	High	High	Low	Low	NOQ3
1757	Pershing	Nevada	32027	Med	High	Low	Low	NOQ3
1758	Storey	Nevada	32029	High	Med	Low	Low	NOQ3
1759	Washoe	Nevada	32031	High	High	Low	Low	Q3
1760	White Pine	Nevada	32033	Med	High	Low	Low	NOQ3
1761	Belknap	New Hampshire	33001	Med	High	Med	Low	NOQ3
1762	Carroll	New Hampshire	33003	Med	High	Med	Low	NOQ3
1763	Cheshire	New Hampshire	33005	Med	High	Med	Low	Q3
1764	Coos	New Hampshire	33007	Med	High	Low	Low	NOQ3
1765	Grafton	New Hampshire	33009	Med	High	Low	Low	NOQ3
1766	Hillsborough	New Hampshire	33011	Med	Low	Med	Low	Q3
1767	Merrimack	New Hampshire	33013	Med	Med	Med	Low	NOQ3
1768	Rockingham	New Hampshire	33015	Med	High	Med	Low	Q3
1769	Strafford	New Hampshire	33017	Med	High	Med	Low	NOQ3
1770	Sullivan	New Hampshire	33019	Med	High	Low	Low	NOQ3
1771	Atlantic	New Jersey	34001	Med	Low	High	Low	Q3
1772	Bergen	New Jersey	34003	Med	High	Med	Med	Q3
1773	Burlington	New Jersey	34005	Med	Med	High	Low	Q3
1774	Camden	New Jersey	34007	Med	Med	Med	Low	Q3
1775	Cape May	New Jersey	34009	Low	Low	High	Med	Q3
1776	Cumberland	New Jersey	34011	Med	Low	High	Low	Q3
1777	Essex	New Jersey	34013	Med	High	Med	Low	Q3
1778	Gloucester	New Jersey	34015	Med	Med	Med	Med	Q3
1779	Hudson	New Jersey	34017	Med	Low	Med	Low	Q3
1780	Hunterdon	New Jersey	34019	Med	Low	Low	Low	Q3
1781	Mercer	New Jersey	34021	Med	Med	Med	Med	Q3
1782	Middlesex	New Jersey	34023	Med	High	Med	Low	Q3
1783	Monmouth	New Jersey	34025	Med	High	High	Low	Q3
1784	Morris	New Jersey	34027	Med	High	Med	Low	Q3
1785	Ocean	New Jersey	34029	Med	Low	High	Low	Q3
1786	Passaic	New Jersey	34031	Med	High	Med	Low	Q3
1787	Salem	New Jersey	34033	Med	Med	Med	Low	Q3
1788	Somerset	New Jersey	34035	Med	High	Med	Low	Q3
1789	Sussex	New Jersey	34037	Med	High	Low	Low	Q3
1790	Union	New Jersey	34039	Med	High	Med	Med	Q3
1791	Warren	New Jersey	34041	Med	Low	Low	Low	Q3
1792	Bernalillo	New Mexico	35001	Med	High	Low	Low	NOQ3
1793	Catron	New Mexico	35003	Med	High	Low	Low	NOQ3
1794	Chaves	New Mexico	35005	Med	Med	Low	Low	NOQ3
1795	Cibola	New Mexico	35006	Med	High	Low	Low	NOQ3
1796	Colfax	New Mexico	35007	Med	High	Low	Low	NOQ3
1797	Curry	New Mexico	35009	Low	Med	Med	Med	Q3
1798	De Baca	New Mexico	35011	Low	Med	Low	Low	NOQ3
1799	Dona Ana	New Mexico	35013	Med	Med	Low	Low	Q3
1800	Eddy	New Mexico	35015	Med	Low	Low	Low	NOQ3
1801	Grant	New Mexico	35017	Med	High	Low	Low	NOQ3
1802	Guadalupe	New Mexico	35019	Med	Med	Low	Low	NOQ3
1803	Harding	New Mexico	35021	Low	Med	Low	Low	NOQ3
1804	Hidalgo	New Mexico	35023	Med	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1805	Lea	New Mexico	35025	Med	Low	Low	Low	NOQ3
1806	Lincoln	New Mexico	35027	Med	High	Low	Low	NOQ3
1807	Los Alamos	New Mexico	35028	Med	High	Low	Low	NOQ3
1808	Luna	New Mexico	35029	Med	Low	Low	Low	NOQ3
1809	Mckinley	New Mexico	35031	Med	High	Low	Low	NOQ3
1810	Mora	New Mexico	35033	Med	High	Low	Low	NOQ3
1811	Otero	New Mexico	35035	Med	High	Low	Low	Q3
1812	Quay	New Mexico	35037	Low	Med	Low	Low	NOQ3
1813	Rio Arriba	New Mexico	35039	Med	High	Low	Low	NOQ3
1814	Roosevelt	New Mexico	35041	Low	Med	Low	Low	NOQ3
1815	San Juan	New Mexico	35045	Med	High	Low	Low	NOQ3
1816	San Miguel	New Mexico	35047	Med	High	Low	Low	NOQ3
1817	Sandoval	New Mexico	35043	Med	High	Low	Low	NOQ3
1818	Santa Fe	New Mexico	35049	Med	High	Low	Low	NOQ3
1819	Sierra	New Mexico	35051	Med	High	Low	Low	NOQ3
1820	Socorro	New Mexico	35053	Med	High	Low	Low	NOQ3
1821	Taos	New Mexico	35055	Med	High	Low	Low	NOQ3
1822	Torrance	New Mexico	35057	Med	Med	Low	Low	NOQ3
1823	Union	New Mexico	35059	Low	High	Low	Low	NOQ3
1824	Valencia	New Mexico	35061	Med	High	Low	Low	NOQ3
1825	Albany	New York	36001	Med	High	Low	Low	Q3
1826	Allegany	New York	36003	Med	Med	Low	Low	Q3
1827	Bronx	New York	36005	Med	Low	Med	Low	Q3
1828	Broome	New York	36007	Low	Med	Low	Low	Q3
1829	Cattaraugus	New York	36009	Med	Med	Low	Low	Q3
1830	Cayuga	New York	36011	Low	Med	Low	Low	Q3
1831	Chautauqua	New York	36013	Med	Med	Low	Low	Q3
1832	Chemung	New York	36015	Low	Low	Low	Low	Q3
1833	Chenango	New York	36017	Low	Med	Low	Low	Q3
1834	Clinton	New York	36019	Med	High	Low	Low	NOQ3
1835	Columbia	New York	36021	Med	High	Low	Low	Q3
1836	Cortland	New York	36023	Low	Med	Low	Low	Q3
1837	Delaware	New York	36025	Med	High	Low	Low	Q3
1838	Dutchess	New York	36027	Med	High	Med	Low	Q3
1839	Erie	New York	36029	Med	Med	Low	Low	Q3
1840	Essex	New York	36031	Med	High	Low	Low	NOQ3
1841	Franklin	New York	36033	Med	High	Low	Low	NOQ3
1842	Fulton	New York	36035	Med	Low	Low	Low	Q3
1843	Genesee	New York	36037	Med	Med	Low	Low	Q3
1844	Greene	New York	36039	Med	High	Low	Low	NOQ3
1845	Hamilton	New York	36041	Med	High	Low	Low	NOQ3
1846	Herkimer	New York	36043	Med	Low	Low	Low	Q3
1847	Jefferson	New York	36045	Med	Med	Low	Low	Q3
1848	Kings	New York	36047	Med	Low	High	Low	Q3
1849	Lewis	New York	36049	Med	Low	Low	Low	NOQ3
1850	Livingston	New York	36051	Med	Med	Low	Low	Q3
1851	Madison	New York	36053	Low	Med	Low	Low	Q3
1852	Monroe	New York	36055	Med	Med	Low	Low	Q3
1853	Montgomery	New York	36057	Med	Low	Low	Low	NOQ3
1854	Nassau	New York	36059	Med	High	High	Low	Q3
1855	New York	New York	36061	Med	Low	Med	Low	Q3
1856	Niagara	New York	36063	Med	High	Low	Low	Q3
1857	Oneida	New York	36065	Med	Med	Low	Low	Q3
1858	Onondaga	New York	36067	Low	Med	Low	Low	Q3
1859	Ontario	New York	36069	Med	Med	Low	Low	Q3
1860	Orange	New York	36071	Med	High	Low	Low	Q3
1861	Orleans	New York	36073	Med	Med	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1862	Oswego	New York	36075	Med	Med	Low	Low	Q3
1863	Otsego	New York	36077	Med	Low	Low	Low	NOQ3
1864	Putnam	New York	36079	Med	High	Med	Low	NOQ3
1865	Queens	New York	36081	Med	Low	High	Low	Q3
1866	Rensselaer	New York	36083	Med	High	Low	Low	Q3
1867	Richmond	New York	36085	Med	Low	Med	Med	Q3
1868	Rockland	New York	36087	Med	High	Med	Low	Q3
1869	Saratoga	New York	36091	Med	High	Low	Low	Q3
1870	Schenectady	New York	36093	Med	High	Low	Low	NOQ3
1871	Schoharie	New York	36095	Med	Low	Low	Low	NOQ3
1872	Schuyler	New York	36097	Low	Med	Low	Low	NOQ3
1873	Seneca	New York	36099	Low	Med	Low	Low	Q3
1874	St Lawrence	New York	36089	Med	High	Low	Low	NOQ3
1875	Steuben	New York	36101	Med	Med	Low	Low	Q3
1876	Suffolk	New York	36103	Med	High	High	Low	Q3
1877	Sullivan	New York	36105	Med	High	Low	Low	Q3
1878	Tioga	New York	36107	Low	Med	Low	Low	Q3
1879	Tompkins	New York	36109	Low	Med	Low	Low	Q3
1880	Ulster	New York	36111	Med	High	Low	Low	Q3
1881	Warren	New York	36113	Med	High	Low	Low	NOQ3
1882	Washington	New York	36115	Med	High	Low	Low	NOQ3
1883	Wayne	New York	36117	Med	Med	Low	Low	Q3
1884	Westchester	New York	36119	Med	High	Med	Low	Q3
1885	Wyoming	New York	36121	Med	Low	Low	Low	NOQ3
1886	Yates	New York	36123	Med	Med	Low	Low	Q3
1887	Alamance	North Carolina	37001	Low	Med	Low	Low	Q3
1888	Alexander	North Carolina	37003	Med	High	Low	Low	NOQ3
1889	Alleghany	North Carolina	37005	Med	High	Low	Low	NOQ3
1890	Anson	North Carolina	37007	Med	High	Med	Low	NOQ3
1891	Ashe	North Carolina	37009	Med	High	Low	Low	NOQ3
1892	Avery	North Carolina	37011	Med	High	Low	Low	NOQ3
1893	Beaufort	North Carolina	37013	Low	Low	High	Low	Q3
1894	Bertie	North Carolina	37015	Low	Low	Med	Low	Q3
1895	Bladen	North Carolina	37017	Med	Low	High	Low	Q3
1896	Brunswick	North Carolina	37019	Med	Low	High	Low	Q3
1897	Buncombe	North Carolina	37021	Med	High	Low	Low	Q3
1898	Burke	North Carolina	37023	Med	High	Low	Low	NOQ3
1899	Cabarrus	North Carolina	37025	Med	High	Med	Med	Q3
1900	Caldwell	North Carolina	37027	Med	High	Low	Low	NOQ3
1901	Camden	North Carolina	37029	Low	Low	High	Low	Q3
1902	Carteret	North Carolina	37031	Low	Low	High	Med	Q3
1903	Caswell	North Carolina	37033	Low	Med	Low	Low	NOQ3
1904	Catawba	North Carolina	37035	Med	High	Med	Med	NOQ3
1905	Chatham	North Carolina	37037	Med	Med	Med	Low	NOQ3
1906	Cherokee	North Carolina	37039	Med	High	Low	Low	NOQ3
1907	Chowan	North Carolina	37041	Low	Low	Med	Med	NOQ3
1908	Clay	North Carolina	37043	Med	High	Low	Low	NOQ3
1909	Cleveland	North Carolina	37045	Med	High	Low	Low	NOQ3
1910	Columbus	North Carolina	37047	Med	Low	High	Low	Q3
1911	Craven	North Carolina	37049	Low	Low	High	Low	Q3
1912	Cumberland	North Carolina	37051	Med	Low	Med	Med	Q3
1913	Currituck	North Carolina	37053	Low	Low	High	Low	Q3
1914	Dare	North Carolina	37055	Low	Low	High	Med	Q3
1915	Davidson	North Carolina	37057	Med	Med	Low	Low	Q3
1916	Davie	North Carolina	37059	Med	Med	Low	Low	NOQ3
1917	Duplin	North Carolina	37061	Med	Low	High	Low	Q3
1918	Durham	North Carolina	37063	Low	Med	Med	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1919	Edgecombe	North Carolina	37065	Low	Low	Med	Low	Q3
1920	Forsyth	North Carolina	37067	Med	Med	Med	Med	Q3
1921	Franklin	North Carolina	37069	Low	Low	Med	Low	Q3
1922	Gaston	North Carolina	37071	Med	High	Low	Low	NOQ3
1923	Gates	North Carolina	37073	Low	Low	Med	Low	NOQ3
1924	Graham	North Carolina	37075	Med	High	Low	Low	NOQ3
1925	Granville	North Carolina	37077	Low	Med	Med	Low	Q3
1926	Greene	North Carolina	37079	Low	Low	Med	Med	Q3
1927	Guilford	North Carolina	37081	Med	Med	Low	Low	Q3
1928	Halifax	North Carolina	37083	Low	Low	Med	Low	Q3
1929	Harnett	North Carolina	37085	Med	Low	Med	Med	Q3
1930	Haywood	North Carolina	37087	Med	High	Low	Low	NOQ3
1931	Henderson	North Carolina	37089	Med	High	Low	Low	Q3
1932	Hertford	North Carolina	37091	Low	Low	Med	Low	NOQ3
1933	Hoke	North Carolina	37093	Med	Low	Med	Low	Q3
1934	Hyde	North Carolina	37095	Low	Low	High	Low	Q3
1935	Iredell	North Carolina	37097	Med	High	Low	Low	NOQ3
1936	Jackson	North Carolina	37099	Med	High	Low	Low	NOQ3
1937	Johnston	North Carolina	37101	Med	Low	Med	Low	Q3
1938	Jones	North Carolina	37103	Low	Low	High	Low	Q3
1939	Lee	North Carolina	37105	Med	Med	Med	Low	NOQ3
1940	Lenoir	North Carolina	37107	Low	Low	High	Med	Q3
1941	Lincoln	North Carolina	37109	Med	High	Low	Low	NOQ3
1942	Macon	North Carolina	37113	Med	High	Low	Low	NOQ3
1943	Madison	North Carolina	37115	Med	High	Low	Low	NOQ3
1944	Martin	North Carolina	37117	Low	Low	Med	Low	NOQ3
1945	Mcdowell	North Carolina	37111	Med	High	Low	Low	NOQ3
1946	Mecklenburg	North Carolina	37119	Med	High	Med	Med	Q3
1947	Mitchell	North Carolina	37121	Med	High	Low	Low	NOQ3
1948	Montgomery	North Carolina	37123	Med	High	Med	Low	NOQ3
1949	Moore	North Carolina	37125	Med	Med	Med	Low	Q3
1950	Nash	North Carolina	37127	Low	Low	Med	Low	Q3
1951	New Hanover	North Carolina	37129	Med	Low	High	Med	Q3
1952	Northampton	North Carolina	37131	Low	Low	Med	Low	NOQ3
1953	Onslow	North Carolina	37133	Med	Low	High	Med	Q3
1954	Orange	North Carolina	37135	Low	Med	Low	Low	Q3
1955	Pamlico	North Carolina	37137	Low	Low	High	Low	Q3
1956	Pasquotank	North Carolina	37139	Low	Low	High	Med	Q3
1957	Pender	North Carolina	37141	Med	Low	High	Low	Q3
1958	Perquimans	North Carolina	37143	Low	Low	Med	Low	NOQ3
1959	Person	North Carolina	37145	Low	Med	Low	Low	Q3
1960	Pitt	North Carolina	37147	Low	Low	Med	Low	Q3
1961	Polk	North Carolina	37149	Med	High	Low	Low	NOQ3
1962	Randolph	North Carolina	37151	Med	Med	Med	Low	Q3
1963	Richmond	North Carolina	37153	Med	Med	Med	Low	NOQ3
1964	Robeson	North Carolina	37155	Med	Low	Med	Low	Q3
1965	Rockingham	North Carolina	37157	Med	High	Low	Low	NOQ3
1966	Rowan	North Carolina	37159	Med	Med	Low	Low	Q3
1967	Rutherford	North Carolina	37161	Med	High	Low	Low	Q3
1968	Sampson	North Carolina	37163	Med	Low	High	Low	Q3
1969	Scotland	North Carolina	37165	Med	Low	Med	Med	Q3
1970	Stanly	North Carolina	37167	Med	High	Med	Med	NOQ3
1971	Stokes	North Carolina	37169	Med	High	Low	Low	Q3
1972	Surry	North Carolina	37171	Med	High	Low	Low	NOQ3
1973	Swain	North Carolina	37173	Med	High	Low	Low	NOQ3
1974	Transylvania	North Carolina	37175	Med	High	Low	Low	NOQ3
1975	Tyrrell	North Carolina	37177	Low	Low	High	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
1976	Union	North Carolina	37179	Med	Med	Med	Med	NOQ3
1977	Vance	North Carolina	37181	Low	Med	Low	Low	Q3
1978	Wake	North Carolina	37183	Low	Med	Med	Med	Q3
1979	Warren	North Carolina	37185	Low	Low	Med	Low	Q3
1980	Washington	North Carolina	37187	Low	Low	High	Low	NOQ3
1981	Watauga	North Carolina	37189	Med	High	Low	Low	Q3
1982	Wayne	North Carolina	37191	Low	Low	Med	Med	Q3
1983	Wilkes	North Carolina	37193	Med	High	Low	Low	NOQ3
1984	Wilson	North Carolina	37195	Low	Low	Med	Low	Q3
1985	Yadkin	North Carolina	37197	Med	High	Low	Low	NOQ3
1986	Yancey	North Carolina	37199	Med	High	Low	Low	NOQ3
1987	Adams	North Dakota	38001	Low	Med	Low	Low	Q3
1988	Barnes	North Dakota	38003	Low	Low	Low	Low	Q3
1989	Benson	North Dakota	38005	Low	Low	Low	Low	NOQ3
1990	Billings	North Dakota	38007	Low	Med	Low	Low	Q3
1991	Bottineau	North Dakota	38009	Low	Med	Low	Low	Q3
1992	Bowman	North Dakota	38011	Low	High	Low	Low	Q3
1993	Burke	North Dakota	38013	Low	High	Low	Low	Q3
1994	Burleigh	North Dakota	38015	Low	Med	Low	Low	Q3
1995	Cass	North Dakota	38017	Low	Low	Med	Med	Q3
1996	Cavalier	North Dakota	38019	Low	Low	Low	Low	Q3
1997	Dickey	North Dakota	38021	Low	Low	Low	Low	NOQ3
1998	Divide	North Dakota	38023	Med	Low	Low	Low	Q3
1999	Dunn	North Dakota	38025	Low	Med	Low	Low	Q3
2000	Eddy	North Dakota	38027	Low	Low	Low	Low	Q3
2001	Emmons	North Dakota	38029	Low	High	Low	Low	Q3
2002	Foster	North Dakota	38031	Low	Low	Low	Low	NOQ3
2003	Golden Valley	North Dakota	38033	Low	Med	Low	Low	Q3
2004	Grand Forks	North Dakota	38035	Low	Low	Low	Low	Q3
2005	Grant	North Dakota	38037	Low	Med	Low	Low	NOQ3
2006	Griggs	North Dakota	38039	Low	Low	Med	Med	Q3
2007	Hettinger	North Dakota	38041	Low	Med	Low	Low	Q3
2008	Kidder	North Dakota	38043	Low	Med	Low	Low	Q3
2009	La Moure	North Dakota	38045	Low	Low	Low	Low	Q3
2010	Logan	North Dakota	38047	Low	Med	Low	Low	Q3
2011	Mchenry	North Dakota	38049	Low	Low	Low	Low	Q3
2012	Mcintosh	North Dakota	38051	Low	Med	Low	Low	Q3
2013	Mckenzie	North Dakota	38053	Low	Med	Low	Low	Q3
2014	Mclean	North Dakota	38055	Low	Med	Low	Low	NOQ3
2015	Mercer	North Dakota	38057	Low	Med	Low	Low	Q3
2016	Morton	North Dakota	38059	Low	High	Low	Low	Q3
2017	Mountrail	North Dakota	38061	Low	Med	Low	Low	Q3
2018	Nelson	North Dakota	38063	Low	Low	Low	Low	Q3
2019	Oliver	North Dakota	38065	Low	Med	Low	Low	Q3
2020	Pembina	North Dakota	38067	Low	Low	Low	Low	Q3
2021	Pierce	North Dakota	38069	Low	Low	Low	Low	Q3
2022	Ramsey	North Dakota	38071	Low	Low	Med	Med	Q3
2023	Ransom	North Dakota	38073	Low	Low	Low	Low	Q3
2024	Renville	North Dakota	38075	Low	High	Low	Low	Q3
2025	Richland	North Dakota	38077	Low	Low	Low	Low	Q3
2026	Rolette	North Dakota	38079	Low	Med	Low	Low	Q3
2027	Sargent	North Dakota	38081	Low	Low	Low	Low	NOQ3
2028	Sheridan	North Dakota	38083	Low	Low	Low	Low	NOQ3
2029	Sioux	North Dakota	38085	Low	High	Low	Low	Q3
2030	Slope	North Dakota	38087	Low	High	Low	Low	Q3
2031	Stark	North Dakota	38089	Low	Med	Low	Low	Q3
2032	Steele	North Dakota	38091	Low	Low	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2033	Stutsman	North Dakota	38093	Low	Low	Low	Low	Q3
2034	Towner	North Dakota	38095	Low	Med	Low	Low	NOQ3
2035	Traill	North Dakota	38097	Low	Low	Low	Low	Q3
2036	Walsh	North Dakota	38099	Low	Low	Low	Low	Q3
2037	Ward	North Dakota	38101	Low	High	Low	Low	Q3
2038	Wells	North Dakota	38103	Low	Low	Low	Low	Q3
2039	Williams	North Dakota	38105	Med	Med	Low	Low	Q3
2040	Adams	Ohio	39001	Med	High	Low	Low	Q3
2041	Allen	Ohio	39003	Med	Med	Med	Med	Q3
2042	Ashland	Ohio	39005	Low	Low	Med	Med	NOQ3
2043	Ashtabula	Ohio	39007	Med	High	Low	Low	NOQ3
2044	Athens	Ohio	39009	Low	High	Low	Low	Q3
2045	Auglaize	Ohio	39011	Med	Med	Low	Low	NOQ3
2046	Belmont	Ohio	39013	Low	High	Low	Low	Q3
2047	Brown	Ohio	39015	Med	High	Low	Low	Q3
2048	Butler	Ohio	39017	Low	High	Med	Med	Q3
2049	Carroll	Ohio	39019	Low	High	Low	Low	Q3
2050	Champaign	Ohio	39021	Med	Low	Low	Low	NOQ3
2051	Clark	Ohio	39023	Med	Low	Med	Med	NOQ3
2052	Clermont	Ohio	39025	Med	High	Low	Low	Q3
2053	Clinton	Ohio	39027	Low	Med	Med	Med	NOQ3
2054	Columbiana	Ohio	39029	Low	High	Med	Med	Q3
2055	Coshocton	Ohio	39031	Low	High	Low	Low	NOQ3
2056	Crawford	Ohio	39033	Low	Med	Med	Med	Q3
2057	Cuyahoga	Ohio	39035	Med	High	Med	Med	Q3
2058	Darke	Ohio	39037	Med	Med	Med	Med	NOQ3
2059	Defiance	Ohio	39039	Low	Med	Low	Low	NOQ3
2060	Delaware	Ohio	39041	Low	Med	Low	Low	Q3
2061	Erie	Ohio	39043	Low	Med	Med	Med	Q3
2062	Fairfield	Ohio	39045	Low	High	Low	Low	Q3
2063	Fayette	Ohio	39047	Low	Low	Low	Low	NOQ3
2064	Franklin	Ohio	39049	Low	Med	Med	Med	Q3
2065	Fulton	Ohio	39051	Low	Med	Med	Med	NOQ3
2066	Gallia	Ohio	39053	Low	High	Low	Low	Q3
2067	Geauga	Ohio	39055	Med	Med	Low	Low	NOQ3
2068	Greene	Ohio	39057	Med	Low	Med	Med	Q3
2069	Guernsey	Ohio	39059	Low	High	Low	Low	NOQ3
2070	Hamilton	Ohio	39061	Low	High	Med	Med	Q3
2071	Hancock	Ohio	39063	Med	Low	Low	Low	Q3
2072	Hardin	Ohio	39065	Med	Med	Low	Low	NOQ3
2073	Harrison	Ohio	39067	Low	High	Low	Low	NOQ3
2074	Henry	Ohio	39069	Low	Med	Low	Low	NOQ3
2075	Highland	Ohio	39071	Low	Low	Med	Med	NOQ3
2076	Hocking	Ohio	39073	Low	High	Low	Low	Q3
2077	Holmes	Ohio	39075	Low	Low	Low	Low	NOQ3
2078	Huron	Ohio	39077	Low	Low	Med	Med	Q3
2079	Jackson	Ohio	39079	Low	High	Low	Low	Q3
2080	Jefferson	Ohio	39081	Low	High	Low	Low	Q3
2081	Knox	Ohio	39083	Low	Low	Low	Low	NOQ3
2082	Lake	Ohio	39085	Med	Med	Low	Low	Q3
2083	Lawrence	Ohio	39087	Med	High	Low	Low	Q3
2084	Licking	Ohio	39089	Low	High	Low	Low	Q3
2085	Logan	Ohio	39091	Med	Low	Low	Low	NOQ3
2086	Lorain	Ohio	39093	Low	Med	Med	Med	Q3
2087	Lucas	Ohio	39095	Low	High	Low	Low	Q3
2088	Madison	Ohio	39097	Med	Low	Low	Low	NOQ3
2089	Mahoning	Ohio	39099	Low	High	Med	Med	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2090	Marion	Ohio	39101	Med	Low	Med	Med	NOQ3
2091	Medina	Ohio	39103	Med	Low	Med	Med	Q3
2092	Meigs	Ohio	39105	Low	High	Low	Low	Q3
2093	Mercer	Ohio	39107	Med	Med	Med	Med	NOQ3
2094	Miami	Ohio	39109	Med	Low	Med	Med	NOQ3
2095	Monroe	Ohio	39111	Low	High	Low	Low	Q3
2096	Montgomery	Ohio	39113	Med	Low	Low	Low	Q3
2097	Morgan	Ohio	39115	Low	High	Low	Low	Q3
2098	Morrow	Ohio	39117	Low	Low	Med	Med	NOQ3
2099	Muskingum	Ohio	39119	Low	High	Low	Low	NOQ3
2100	Noble	Ohio	39121	Low	High	Low	Low	NOQ3
2101	Ottawa	Ohio	39123	Low	Med	Low	Low	Q3
2102	Paulding	Ohio	39125	Med	Med	Low	Low	NOQ3
2103	Perry	Ohio	39127	Low	High	Low	Low	NOQ3
2104	Pickaway	Ohio	39129	Low	Med	Med	Med	NOQ3
2105	Pike	Ohio	39131	Low	Med	Low	Low	Q3
2106	Portage	Ohio	39133	Med	Med	Low	Low	NOQ3
2107	Preble	Ohio	39135	Med	Low	Low	Low	NOQ3
2108	Putnam	Ohio	39137	Med	Med	Med	Med	NOQ3
2109	Richland	Ohio	39139	Low	Med	Med	Med	Q3
2110	Ross	Ohio	39141	Low	Med	Low	Low	Q3
2111	Sandusky	Ohio	39143	Low	Med	Low	Low	NOQ3
2112	Scioto	Ohio	39145	Med	Med	Low	Low	Q3
2113	Seneca	Ohio	39147	Low	Low	Med	Med	Q3
2114	Shelby	Ohio	39149	Med	Low	Low	Low	NOQ3
2115	Stark	Ohio	39151	Low	High	Low	Low	Q3
2116	Summit	Ohio	39153	Med	High	Low	Low	Q3
2117	Trumbull	Ohio	39155	Med	High	Low	Low	Q3
2118	Tuscarawas	Ohio	39157	Low	High	Low	Low	NOQ3
2119	Union	Ohio	39159	Med	Low	Low	Low	NOQ3
2120	Van Wert	Ohio	39161	Med	Low	Low	Low	NOQ3
2121	Vinton	Ohio	39163	Low	High	Low	Low	Q3
2122	Warren	Ohio	39165	Low	High	Med	Med	Q3
2123	Washington	Ohio	39167	Low	High	Low	Low	Q3
2124	Wayne	Ohio	39169	Low	Low	Low	Low	Q3
2125	Williams	Ohio	39171	Low	Med	Low	Low	NOQ3
2126	Wood	Ohio	39173	Low	High	Low	Low	Q3
2127	Wyandot	Ohio	39175	Med	Low	Med	Med	NOQ3
2128	Adair	Oklahoma	40001	Low	Med	Low	Low	NOQ3
2129	Alfalfa	Oklahoma	40003	Low	Low	Med	Med	NOQ3
2130	Atoka	Oklahoma	40005	Med	High	Med	Med	NOQ3
2131	Beaver	Oklahoma	40007	Low	Low	Low	Low	NOQ3
2132	Beckham	Oklahoma	40009	Med	Low	Med	Med	NOQ3
2133	Blaine	Oklahoma	40011	Med	Low	Med	Med	NOQ3
2134	Bryan	Oklahoma	40013	Med	Med	Med	Med	NOQ3
2135	Caddo	Oklahoma	40015	Med	Low	Med	Med	NOQ3
2136	Canadian	Oklahoma	40017	Med	Low	Med	Med	Q3
2137	Carter	Oklahoma	40019	Med	Low	Med	Med	NOQ3
2138	Cherokee	Oklahoma	40021	Low	Med	Low	Low	NOQ3
2139	Choctaw	Oklahoma	40023	Low	Med	Low	Low	NOQ3
2140	Cimarron	Oklahoma	40025	Low	High	Low	Low	NOQ3
2141	Cleveland	Oklahoma	40027	Med	Low	Med	Med	Q3
2142	Coal	Oklahoma	40029	Med	High	Med	Med	NOQ3
2143	Comanche	Oklahoma	40031	Med	Low	Med	Med	Q3
2144	Cotton	Oklahoma	40033	Med	Low	Med	Med	NOQ3
2145	Craig	Oklahoma	40035	Low	Low	Med	Med	NOQ3
2146	Creek	Oklahoma	40037	Low	Med	Med	Med	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2147	Custer	Oklahoma	40039	Med	Low	Med	Med	NOQ3
2148	Delaware	Oklahoma	40041	Low	Low	Med	Med	NOQ3
2149	Dewey	Oklahoma	40043	Med	Low	Med	Med	NOQ3
2150	Ellis	Oklahoma	40045	Low	Low	Med	Med	NOQ3
2151	Garfield	Oklahoma	40047	Med	Low	Med	Med	Q3
2152	Garvin	Oklahoma	40049	Med	Low	Med	Med	NOQ3
2153	Grady	Oklahoma	40051	Med	Low	Med	Med	Q3
2154	Grant	Oklahoma	40053	Low	Low	Med	Med	NOQ3
2155	Greer	Oklahoma	40055	Med	Low	Med	Med	NOQ3
2156	Harmon	Oklahoma	40057	Low	Low	Med	Med	NOQ3
2157	Harper	Oklahoma	40059	Low	Low	Low	Low	NOQ3
2158	Haskell	Oklahoma	40061	Low	High	Low	Low	NOQ3
2159	Hughes	Oklahoma	40063	Med	Low	Med	Med	NOQ3
2160	Jackson	Oklahoma	40065	Med	Low	Med	Med	NOQ3
2161	Jefferson	Oklahoma	40067	Med	Low	Med	Med	NOQ3
2162	Johnston	Oklahoma	40069	Med	Med	Med	Med	NOQ3
2163	Kay	Oklahoma	40071	Low	Low	Med	Med	Q3
2164	Kingfisher	Oklahoma	40073	Med	Low	Med	Med	NOQ3
2165	Kiowa	Oklahoma	40075	Med	Low	Med	Med	NOQ3
2166	Latimer	Oklahoma	40077	Low	High	Low	Low	NOQ3
2167	Le Flore	Oklahoma	40079	Low	High	Low	Low	NOQ3
2168	Lincoln	Oklahoma	40081	Med	Low	Med	Med	NOQ3
2169	Logan	Oklahoma	40083	Med	Low	Med	Med	NOQ3
2170	Love	Oklahoma	40085	Med	Med	Med	Med	NOQ3
2171	Major	Oklahoma	40093	Med	Low	Med	Med	NOQ3
2172	Marshall	Oklahoma	40095	Med	Med	Med	Med	NOQ3
2173	Mayes	Oklahoma	40097	Low	Med	Med	Med	NOQ3
2174	Mcclain	Oklahoma	40087	Med	Low	Med	Med	NOQ3
2175	Mccurtain	Oklahoma	40089	Low	Med	Low	Low	NOQ3
2176	Mcintosh	Oklahoma	40091	Low	High	Med	Med	NOQ3
2177	Murray	Oklahoma	40099	Med	Low	Med	Med	NOQ3
2178	Muskogee	Oklahoma	40101	Low	High	Med	Med	NOQ3
2179	Noble	Oklahoma	40103	Med	Low	Med	Med	NOQ3
2180	Nowata	Oklahoma	40105	Low	Low	Med	Med	NOQ3
2181	Okfuskee	Oklahoma	40107	Med	Low	Med	Med	NOQ3
2182	Oklahoma	Oklahoma	40109	Med	Low	Med	Med	Q3
2183	Okmulgee	Oklahoma	40111	Low	Low	Med	Med	NOQ3
2184	Osage	Oklahoma	40113	Low	High	Low	Low	Q3
2185	Ottawa	Oklahoma	40115	Low	Low	Med	Med	Q3
2186	Pawnee	Oklahoma	40117	Low	Med	Med	Med	NOQ3
2187	Payne	Oklahoma	40119	Med	Low	Med	Med	Q3
2188	Pittsburg	Oklahoma	40121	Med	High	Med	Med	NOQ3
2189	Pontotoc	Oklahoma	40123	Med	Low	Med	Med	NOQ3
2190	Pottawatomie	Oklahoma	40125	Med	Low	Med	Med	NOQ3
2191	Pushmataha	Oklahoma	40127	Low	Med	Low	Low	NOQ3
2192	Roger Mills	Oklahoma	40129	Low	Low	Med	Med	NOQ3
2193	Rogers	Oklahoma	40131	Low	Low	Med	Med	NOQ3
2194	Seminole	Oklahoma	40133	Med	Low	Med	Med	NOQ3
2195	Sequoyah	Oklahoma	40135	Low	Med	Med	Med	NOQ3
2196	Stephens	Oklahoma	40137	Med	Low	Med	Med	NOQ3
2197	Texas	Oklahoma	40139	Low	Low	Low	Low	NOQ3
2198	Tillman	Oklahoma	40141	Med	Low	Med	Med	NOQ3
2199	Tulsa	Oklahoma	40143	Low	High	Med	Med	Q3
2200	Wagoner	Oklahoma	40145	Low	High	Med	Med	NOQ3
2201	Washington	Oklahoma	40147	Low	Med	Med	Med	NOQ3
2202	Washita	Oklahoma	40149	Med	Low	Med	Med	NOQ3
2203	Woods	Oklahoma	40151	Low	Low	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2204	Woodward	Oklahoma	40153	Low	Low	Med	Med	NOQ3
2205	Baker	Oregon	41001	Med	High	Low	Low	NOQ3
2206	Benton	Oregon	41003	High	Med	Low	Low	Q3
2207	Clackamas	Oregon	41005	Med	High	Low	Low	Q3
2208	Clatsop	Oregon	41007	High	High	Low	Low	Q3
2209	Columbia	Oregon	41009	Med	High	Low	Low	Q3
2210	Coos	Oregon	41011	High	High	Low	Low	Q3
2211	Crook	Oregon	41013	Med	High	Low	Low	NOQ3
2212	Curry	Oregon	41015	High	High	Low	Low	NOQ3
2213	Deschutes	Oregon	41017	Med	High	Low	Low	Q3
2214	Douglas	Oregon	41019	High	High	Low	Low	Q3
2215	Gilliam	Oregon	41021	Med	High	Low	Low	Q3
2216	Grant	Oregon	41023	Med	High	Low	Low	NOQ3
2217	Harney	Oregon	41025	Med	High	Low	Low	NOQ3
2218	Hood River	Oregon	41027	Med	Med	Low	Low	Q3
2219	Jackson	Oregon	41029	Med	High	Low	Low	Q3
2220	Jefferson	Oregon	41031	Med	High	Low	Low	Q3
2221	Josephine	Oregon	41033	High	High	Low	Low	Q3
2222	Klamath	Oregon	41035	High	Med	Low	Low	NOQ3
2223	Lake	Oregon	41037	Med	High	Low	Low	NOQ3
2224	Lane	Oregon	41039	High	High	Low	Low	Q3
2225	Lincoln	Oregon	41041	High	High	Low	Low	Q3
2226	Linn	Oregon	41043	Med	High	Low	Low	Q3
2227	Malheur	Oregon	41045	Med	High	Low	Low	NOQ3
2228	Marion	Oregon	41047	Med	High	Low	Low	Q3
2229	Morrow	Oregon	41049	Med	High	Low	Low	Q3
2230	Multnomah	Oregon	41051	Med	High	Low	Low	Q3
2231	Polk	Oregon	41053	Med	Med	Low	Low	Q3
2232	Sherman	Oregon	41055	Med	Low	Low	Low	Q3
2233	Tillamook	Oregon	41057	High	High	Low	Low	Q3
2234	Umatilla	Oregon	41059	Med	Low	Low	Low	Q3
2235	Union	Oregon	41061	Med	High	Low	Low	Q3
2236	Wallowa	Oregon	41063	Med	High	Low	Low	Q3
2237	Wasco	Oregon	41065	Med	High	Low	Low	Q3
2238	Washington	Oregon	41067	Med	High	Low	Low	Q3
2239	Wheeler	Oregon	41069	Med	High	Low	Low	Q3
2240	Yamhill	Oregon	41071	High	Med	Low	Low	Q3
2241	Adams	Pennsylvania	42001	Low	High	Low	Low	Q3
2242	Allegheny	Pennsylvania	42003	Low	High	Low	Low	Q3
2243	Armstrong	Pennsylvania	42005	Low	High	Low	Low	Q3
2244	Beaver	Pennsylvania	42007	Low	High	Med	Med	Q3
2245	Bedford	Pennsylvania	42009	Low	High	Low	Low	Q3
2246	Berks	Pennsylvania	42011	Med	High	Low	Low	Q3
2247	Blair	Pennsylvania	42013	Low	High	Low	Low	Q3
2248	Bradford	Pennsylvania	42015	Low	Med	Low	Low	Q3
2249	Bucks	Pennsylvania	42017	Med	Med	Med	Med	Q3
2250	Butler	Pennsylvania	42019	Low	High	Low	Low	Q3
2251	Cambria	Pennsylvania	42021	Low	High	Low	Low	Q3
2252	Cameron	Pennsylvania	42023	Low	High	Low	Low	NOQ3
2253	Carbon	Pennsylvania	42025	Med	High	Low	Low	Q3
2254	Centre	Pennsylvania	42027	Low	High	Low	Low	NOQ3
2255	Chester	Pennsylvania	42029	Med	Low	Med	Med	Q3
2256	Clarion	Pennsylvania	42031	Low	High	Low	Low	Q3
2257	Clearfield	Pennsylvania	42033	Low	High	Low	Low	Q3
2258	Clinton	Pennsylvania	42035	Low	High	Low	Low	Q3
2259	Columbia	Pennsylvania	42037	Med	High	Low	Low	Q3
2260	Crawford	Pennsylvania	42039	Low	Low	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2261	Cumberland	Pennsylvania	42041	Med	High	Low	Low	Q3
2262	Dauphin	Pennsylvania	42043	Med	High	Low	Low	Q3
2263	Delaware	Pennsylvania	42045	Med	Med	Low	Low	Q3
2264	Elk	Pennsylvania	42047	Low	High	Low	Low	NOQ3
2265	Erie	Pennsylvania	42049	Low	Med	Low	Low	Q3
2266	Fayette	Pennsylvania	42051	Low	High	Low	Low	Q3
2267	Forest	Pennsylvania	42053	Low	High	Low	Low	NOQ3
2268	Franklin	Pennsylvania	42055	Low	High	Low	Low	Q3
2269	Fulton	Pennsylvania	42057	Low	High	Low	Low	NOQ3
2270	Greene	Pennsylvania	42059	Low	High	Low	Low	NOQ3
2271	Huntingdon	Pennsylvania	42061	Low	High	Low	Low	NOQ3
2272	Indiana	Pennsylvania	42063	Low	High	Low	Low	Q3
2273	Jefferson	Pennsylvania	42065	Low	High	Low	Low	NOQ3
2274	Juniata	Pennsylvania	42067	Low	High	Low	Low	NOQ3
2275	Lackawanna	Pennsylvania	42069	Med	High	Low	Low	Q3
2276	Lancaster	Pennsylvania	42071	Med	Low	Low	Low	Q3
2277	Lawrence	Pennsylvania	42073	Low	High	Med	Med	Q3
2278	Lebanon	Pennsylvania	42075	Med	High	Med	Med	Q3
2279	Lehigh	Pennsylvania	42077	Med	High	Med	Med	Q3
2280	Luzerne	Pennsylvania	42079	Med	High	Low	Low	Q3
2281	Lycoming	Pennsylvania	42081	Low	High	Low	Low	Q3
2282	Mckean	Pennsylvania	42083	Low	High	Low	Low	NOQ3
2283	Mercer	Pennsylvania	42085	Low	High	Low	Low	NOQ3
2284	Mifflin	Pennsylvania	42087	Low	High	Low	Low	Q3
2285	Monroe	Pennsylvania	42089	Med	High	Low	Low	NOQ3
2286	Montgomery	Pennsylvania	42091	Med	Low	Med	Med	Q3
2287	Montour	Pennsylvania	42093	Low	High	Low	Low	NOQ3
2288	Northampton	Pennsylvania	42095	Med	High	Med	Med	Q3
2289	Northumberland	Pennsylvania	42097	Med	High	Low	Low	Q3
2290	Perry	Pennsylvania	42099	Low	High	Low	Low	Q3
2291	Philadelphia	Pennsylvania	42101	Med	Med	Med	Med	Q3
2292	Pike	Pennsylvania	42103	Med	High	Low	Low	NOQ3
2293	Potter	Pennsylvania	42105	Low	Med	Low	Low	NOQ3
2294	Schuylkill	Pennsylvania	42107	Med	High	Low	Low	Q3
2295	Snyder	Pennsylvania	42109	Low	High	Low	Low	Q3
2296	Somerset	Pennsylvania	42111	Low	High	Low	Low	Q3
2297	Sullivan	Pennsylvania	42113	Low	Med	Low	Low	NOQ3
2298	Susquehanna	Pennsylvania	42115	Low	High	Low	Low	NOQ3
2299	Tioga	Pennsylvania	42117	Low	Med	Low	Low	NOQ3
2300	Union	Pennsylvania	42119	Low	High	Low	Low	Q3
2301	Venango	Pennsylvania	42121	Low	High	Low	Low	NOQ3
2302	Warren	Pennsylvania	42123	Low	High	Low	Low	Q3
2303	Washington	Pennsylvania	42125	Low	High	Low	Low	Q3
2304	Wayne	Pennsylvania	42127	Med	High	Low	Low	NOQ3
2305	Westmoreland	Pennsylvania	42129	Low	High	Med	Med	Q3
2306	Wyoming	Pennsylvania	42131	Med	Med	Low	Low	Q3
2307	York	Pennsylvania	42133	Med	High	Low	Low	Q3
2308	Bristol	Rhode Island	44001	Med	Low	High	Med	Q3
2309	Kent	Rhode Island	44003	Med	Low	High	Low	Q3
2310	Newport	Rhode Island	44005	Med	Low	High	Low	Q3
2311	Providence	Rhode Island	44007	Med	Low	High	Low	Q3
2312	Washington	Rhode Island	44009	Med	Low	High	Low	Q3
2313	Abbeville	South Carolina	45001	Med	Med	Low	Low	NOQ3
2314	Aiken	South Carolina	45003	Med	Low	Med	Low	NOQ3
2315	Allendale	South Carolina	45005	Med	Low	Med	Low	NOQ3
2316	Anderson	South Carolina	45007	Med	High	Low	Low	NOQ3
2317	Bamberg	South Carolina	45009	Med	Low	Med	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2318	Barnwell	South Carolina	45011	Med	Low	Med	Low	NOQ3
2319	Beaufort	South Carolina	45013	Med	Low	High	Low	Q3
2320	Berkeley	South Carolina	45015	High	Low	High	Low	Q3
2321	Calhoun	South Carolina	45017	Med	Low	Med	Low	NOQ3
2322	Charleston	South Carolina	45019	High	Low	High	Low	Q3
2323	Cherokee	South Carolina	45021	Med	High	Med	Med	NOQ3
2324	Chester	South Carolina	45023	Med	Med	Med	Low	NOQ3
2325	Chesterfield	South Carolina	45025	Med	Med	Med	Low	NOQ3
2326	Clarendon	South Carolina	45027	High	Low	Med	Low	NOQ3
2327	Colleton	South Carolina	45029	High	Low	High	Low	Q3
2328	Darlington	South Carolina	45031	Med	Low	Med	Low	NOQ3
2329	Dillon	South Carolina	45033	Med	Low	Med	Low	NOQ3
2330	Dorchester	South Carolina	45035	High	Low	High	Low	NOQ3
2331	Edgefield	South Carolina	45037	Med	Low	Med	Low	NOQ3
2332	Fairfield	South Carolina	45039	Med	Med	Med	Low	NOQ3
2333	Florence	South Carolina	45041	High	Low	High	Med	NOQ3
2334	Georgetown	South Carolina	45043	High	Low	High	Low	Q3
2335	Greenville	South Carolina	45045	Med	High	Med	Med	Q3
2336	Greenwood	South Carolina	45047	Med	Med	Med	Med	NOQ3
2337	Hampton	South Carolina	45049	Med	Low	High	Low	Q3
2338	Horry	South Carolina	45051	Med	Low	High	Med	Q3
2339	Jasper	South Carolina	45053	Med	Low	High	Low	Q3
2340	Kershaw	South Carolina	45055	Med	Low	Med	Low	NOQ3
2341	Lancaster	South Carolina	45057	Med	Med	Med	Low	NOQ3
2342	Laurens	South Carolina	45059	Med	Med	Low	Low	NOQ3
2343	Lee	South Carolina	45061	Med	Low	Med	Low	NOQ3
2344	Lexington	South Carolina	45063	Med	Med	Med	Med	Q3
2345	Marion	South Carolina	45067	High	Low	High	Low	NOQ3
2346	Marlboro	South Carolina	45069	Med	Low	Med	Low	NOQ3
2347	Mccormick	South Carolina	45065	Med	Med	Med	Low	NOQ3
2348	Newberry	South Carolina	45071	Med	Med	Med	Med	NOQ3
2349	Oconee	South Carolina	45073	Med	High	Low	Low	NOQ3
2350	Orangeburg	South Carolina	45075	High	Low	High	Med	NOQ3
2351	Pickens	South Carolina	45077	Med	High	Med	Med	NOQ3
2352	Richland	South Carolina	45079	Med	Med	Med	Med	Q3
2353	Saluda	South Carolina	45081	Med	Med	Med	Low	Q3
2354	Spartanburg	South Carolina	45083	Med	High	Med	Med	Q3
2355	Sumter	South Carolina	45085	Med	Low	Med	Low	Q3
2356	Union	South Carolina	45087	Med	Med	Low	Low	NOQ3
2357	Williamsburg	South Carolina	45089	High	Low	High	Low	NOQ3
2358	York	South Carolina	45091	Med	Med	Low	Low	NOQ3
2359	Aurora	South Dakota	46003	Med	Med	Low	Low	Q3
2360	Beadle	South Dakota	46005	Med	Low	Low	Low	Q3
2361	Bennett	South Dakota	46007	Low	Low	Low	Low	NOQ3
2362	Bon Homme	South Dakota	46009	Low	High	Med	Med	NOQ3
2363	Brookings	South Dakota	46011	Low	Low	Med	Med	Q3
2364	Brown	South Dakota	46013	Low	Low	Med	Med	Q3
2365	Brule	South Dakota	46015	Med	High	Low	Low	NOQ3
2366	Buffalo	South Dakota	46017	Med	High	Med	Med	NOQ3
2367	Butte	South Dakota	46019	Low	High	Low	Low	Q3
2368	Campbell	South Dakota	46021	Low	High	Low	Low	Q3
2369	Charles Mix	South Dakota	46023	Low	High	Med	Med	Q3
2370	Clark	South Dakota	46025	Low	Low	Low	Low	Q3
2371	Clay	South Dakota	46027	Low	High	Med	Med	Q3
2372	Codington	South Dakota	46029	Low	Low	Med	Med	Q3
2373	Corson	South Dakota	46031	Low	High	Low	Low	NOQ3
2374	Custer	South Dakota	46033	Low	High	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2375	Davison	South Dakota	46035	Low	Low	Med	Med	Q3
2376	Day	South Dakota	46037	Low	Low	Low	Low	NOQ3
2377	Deuel	South Dakota	46039	Low	Low	Low	Low	Q3
2378	Dewey	South Dakota	46041	Low	High	Low	Low	Q3
2379	Douglas	South Dakota	46043	Low	Low	Med	Med	Q3
2380	Edmunds	South Dakota	46045	Low	Low	Low	Low	Q3
2381	Fall River	South Dakota	46047	Low	High	Low	Low	Q3
2382	Faulk	South Dakota	46049	Low	Low	Low	Low	Q3
2383	Grant	South Dakota	46051	Low	Low	Low	Low	Q3
2384	Gregory	South Dakota	46053	Low	High	Low	Low	NOQ3
2385	Haakon	South Dakota	46055	Low	High	Low	Low	Q3
2386	Hamlin	South Dakota	46057	Low	Low	Low	Low	Q3
2387	Hand	South Dakota	46059	Med	Med	Low	Low	Q3
2388	Hanson	South Dakota	46061	Low	Low	Low	Low	Q3
2389	Harding	South Dakota	46063	Low	High	Low	Low	Q3
2390	Hughes	South Dakota	46065	Low	High	Low	Low	Q3
2391	Hutchinson	South Dakota	46067	Low	Med	Med	Med	Q3
2392	Hyde	South Dakota	46069	Low	High	Low	Low	NOQ3
2393	Jackson	South Dakota	46071	Low	High	Low	Low	Q3
2394	Jerauld	South Dakota	46073	Med	Med	Low	Low	NOQ3
2395	Jones	South Dakota	46075	Low	High	Low	Low	NOQ3
2396	Kingsbury	South Dakota	46077	Low	Low	Low	Low	Q3
2397	Lake	South Dakota	46079	Low	Low	Med	Med	Q3
2398	Lawrence	South Dakota	46081	Low	High	Low	Low	Q3
2399	Lincoln	South Dakota	46083	Low	Low	Med	Med	Q3
2400	Lyman	South Dakota	46085	Low	High	Low	Low	Q3
2401	Marshall	South Dakota	46091	Low	Low	Low	Low	Q3
2402	Mccook	South Dakota	46087	Low	Low	Med	Med	Q3
2403	Mcpherson	South Dakota	46089	Low	Low	Low	Low	Q3
2404	Meade	South Dakota	46093	Low	High	Low	Low	Q3
2405	Mellette	South Dakota	46095	Low	High	Low	Low	NOQ3
2406	Miner	South Dakota	46097	Low	Low	Med	Med	Q3
2407	Minnehaha	South Dakota	46099	Low	Low	Med	Med	Q3
2408	Moody	South Dakota	46101	Low	Low	Low	Low	Q3
2409	Pennington	South Dakota	46103	Low	High	Low	Low	Q3
2410	Perkins	South Dakota	46105	Low	High	Low	Low	Q3
2411	Potter	South Dakota	46107	Low	High	Low	Low	NOQ3
2412	Roberts	South Dakota	46109	Low	Low	Low	Low	Q3
2413	Sanborn	South Dakota	46111	Med	Low	Low	Low	Q3
2414	Shannon	South Dakota	46113	Low	High	Low	Low	Q3
2415	Spink	South Dakota	46115	Low	Low	Med	Med	Q3
2416	Stanley	South Dakota	46117	Low	High	Low	Low	Q3
2417	Sully	South Dakota	46119	Low	High	Low	Low	NOQ3
2418	Todd	South Dakota	46121	Low	High	Low	Low	Q3
2419	Tripp	South Dakota	46123	Low	High	Low	Low	Q3
2420	Turner	South Dakota	46125	Low	Med	Med	Med	Q3
2421	Union	South Dakota	46127	Low	Med	Med	Med	Q3
2422	Walworth	South Dakota	46129	Low	High	Med	Med	Q3
2423	Yankton	South Dakota	46135	Low	High	Med	Med	Q3
2424	Ziebach	South Dakota	46137	Low	High	Low	Low	Q3
2425	Anderson	Tennessee	47001	Med	High	Low	Low	NOQ3
2426	Bedford	Tennessee	47003	Med	Med	Low	Low	NOQ3
2427	Benton	Tennessee	47005	Med	Low	Low	Low	Q3
2428	Bledsoe	Tennessee	47007	Med	High	Low	Low	NOQ3
2429	Blount	Tennessee	47009	Med	High	Low	Low	NOQ3
2430	Bradley	Tennessee	47011	Med	Med	Med	Med	NOQ3
2431	Campbell	Tennessee	47013	Med	High	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2432	Cannon	Tennessee	47015	Med	Med	Low	Low	NOQ3
2433	Carroll	Tennessee	47017	Med	Low	Low	Low	Q3
2434	Carter	Tennessee	47019	Med	High	Low	Low	NOQ3
2435	Cheatham	Tennessee	47021	Med	Low	Low	Low	Q3
2436	Chester	Tennessee	47023	Med	Low	Med	Med	Q3
2437	Claiborne	Tennessee	47025	Med	High	Low	Low	NOQ3
2438	Clay	Tennessee	47027	Med	Med	Low	Low	Q3
2439	Cocke	Tennessee	47029	Med	High	Low	Low	NOQ3
2440	Coffee	Tennessee	47031	Med	Med	Low	Low	NOQ3
2441	Crockett	Tennessee	47033	High	Low	Low	Low	NOQ3
2442	Cumberland	Tennessee	47035	Med	High	Low	Low	NOQ3
2443	Davidson	Tennessee	47037	Med	Med	Low	Low	Q3
2444	De Kalb	Tennessee	47041	Med	Med	Low	Low	Q3
2445	Decatur	Tennessee	47039	Med	Low	Low	Low	Q3
2446	Dickson	Tennessee	47043	Med	Low	Low	Low	Q3
2447	Dyer	Tennessee	47045	High	High	Med	Med	Q3
2448	Fayette	Tennessee	47047	High	Low	Low	Low	NOQ3
2449	Fentress	Tennessee	47049	Med	High	Low	Low	NOQ3
2450	Franklin	Tennessee	47051	Med	High	Low	Low	NOQ3
2451	Gibson	Tennessee	47053	High	Low	Low	Low	Q3
2452	Giles	Tennessee	47055	Med	Med	Low	Low	NOQ3
2453	Grainger	Tennessee	47057	Med	High	Low	Low	NOQ3
2454	Greene	Tennessee	47059	Med	High	Low	Low	NOQ3
2455	Grundy	Tennessee	47061	Med	High	Low	Low	Q3
2456	Hamblen	Tennessee	47063	Med	High	Low	Low	NOQ3
2457	Hamilton	Tennessee	47065	Med	High	Low	Low	Q3
2458	Hancock	Tennessee	47067	Med	High	Low	Low	NOQ3
2459	Hardeman	Tennessee	47069	Med	Low	Low	Low	Q3
2460	Hardin	Tennessee	47071	Med	Low	Low	Low	Q3
2461	Hawkins	Tennessee	47073	Med	High	Low	Low	NOQ3
2462	Haywood	Tennessee	47075	High	Low	Low	Low	NOQ3
2463	Henderson	Tennessee	47077	Med	Low	Low	Low	Q3
2464	Henry	Tennessee	47079	Med	Low	Low	Low	Q3
2465	Hickman	Tennessee	47081	Med	Low	Low	Low	NOQ3
2466	Houston	Tennessee	47083	Med	Low	Low	Low	Q3
2467	Humphreys	Tennessee	47085	Med	Low	Low	Low	Q3
2468	Jackson	Tennessee	47087	Med	Med	Low	Low	Q3
2469	Jefferson	Tennessee	47089	Med	High	Low	Low	NOQ3
2470	Johnson	Tennessee	47091	Med	High	Low	Low	NOQ3
2471	Knox	Tennessee	47093	Med	High	Low	Low	NOQ3
2472	Lake	Tennessee	47095	High	High	Low	Low	Q3
2473	Lauderdale	Tennessee	47097	High	High	Med	Med	Q3
2474	Lawrence	Tennessee	47099	Med	Low	Med	Med	NOQ3
2475	Lewis	Tennessee	47101	Med	Low	Low	Low	NOQ3
2476	Lincoln	Tennessee	47103	Med	Med	Med	Med	NOQ3
2477	Loudon	Tennessee	47105	Med	Med	Low	Low	NOQ3
2478	Macon	Tennessee	47111	Med	Low	Low	Low	NOQ3
2479	Madison	Tennessee	47113	Med	Low	Med	Med	Q3
2480	Marion	Tennessee	47115	Med	High	Low	Low	NOQ3
2481	Marshall	Tennessee	47117	Med	Med	Med	Med	NOQ3
2482	Maury	Tennessee	47119	Med	Low	Low	Low	Q3
2483	Mcminn	Tennessee	47107	Med	High	Med	Med	NOQ3
2484	Mcnairy	Tennessee	47109	Med	Low	Low	Low	Q3
2485	Meigs	Tennessee	47121	Med	High	Low	Low	NOQ3
2486	Monroe	Tennessee	47123	Med	High	Low	Low	NOQ3
2487	Montgomery	Tennessee	47125	Med	Low	Low	Low	Q3
2488	Moore	Tennessee	47127	Med	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2489	Morgan	Tennessee	47129	Med	High	Low	Low	NOQ3
2490	Obion	Tennessee	47131	High	High	Low	Low	Q3
2491	Overton	Tennessee	47133	Med	High	Low	Low	NOQ3
2492	Perry	Tennessee	47135	Med	Low	Low	Low	NOQ3
2493	Pickett	Tennessee	47137	Med	High	Low	Low	NOQ3
2494	Polk	Tennessee	47139	Med	High	Low	Low	NOQ3
2495	Putnam	Tennessee	47141	Med	High	Low	Low	NOQ3
2496	Rhea	Tennessee	47143	Med	High	Low	Low	NOQ3
2497	Roane	Tennessee	47145	Med	High	Low	Low	NOQ3
2498	Robertson	Tennessee	47147	Med	Low	Low	Low	Q3
2499	Rutherford	Tennessee	47149	Med	Med	Low	Low	Q3
2500	Scott	Tennessee	47151	Med	High	Low	Low	NOQ3
2501	Sequatchie	Tennessee	47153	Med	High	Low	Low	NOQ3
2502	Sevier	Tennessee	47155	Med	High	Low	Low	NOQ3
2503	Shelby	Tennessee	47157	High	High	Med	Med	Q3
2504	Smith	Tennessee	47159	Med	Med	Low	Low	NOQ3
2505	Stewart	Tennessee	47161	Med	Low	Low	Low	Q3
2506	Sullivan	Tennessee	47163	Med	High	Low	Low	NOQ3
2507	Sumner	Tennessee	47165	Med	Low	Med	Med	Q3
2508	Tipton	Tennessee	47167	High	High	Med	Med	Q3
2509	Trousdale	Tennessee	47169	Med	Low	Med	Med	NOQ3
2510	Unicoi	Tennessee	47171	Med	High	Low	Low	NOQ3
2511	Union	Tennessee	47173	Med	High	Low	Low	NOQ3
2512	Van Buren	Tennessee	47175	Med	High	Low	Low	NOQ3
2513	Warren	Tennessee	47177	Med	High	Med	Med	NOQ3
2514	Washington	Tennessee	47179	Med	High	Low	Low	NOQ3
2515	Wayne	Tennessee	47181	Med	Low	Low	Low	NOQ3
2516	Weakley	Tennessee	47183	High	Low	Med	Med	Q3
2517	White	Tennessee	47185	Med	High	Low	Low	NOQ3
2518	Williamson	Tennessee	47187	Med	Med	Low	Low	Q3
2519	Wilson	Tennessee	47189	Med	Med	Med	Med	NOQ3
2520	Anderson	Texas	48001	Low	Low	Low	Low	NOQ3
2521	Andrews	Texas	48003	Med	Low	Low	Low	NOQ3
2522	Angelina	Texas	48005	Low	Low	Med	Med	Q3
2523	Aransas	Texas	48007	Low	Low	High	Med	Q3
2524	Archer	Texas	48009	Low	Low	Low	Low	Q3
2525	Armstrong	Texas	48011	Low	Low	Med	Med	NOQ3
2526	Atascosa	Texas	48013	Low	Med	Med	Low	NOQ3
2527	Austin	Texas	48015	Low	Low	Med	Med	Q3
2528	Bailey	Texas	48017	Low	Low	Med	Med	NOQ3
2529	Bandera	Texas	48019	Low	Low	Low	Low	Q3
2530	Bastrop	Texas	48021	Low	High	Med	Low	Q3
2531	Baylor	Texas	48023	Low	Low	Med	Med	NOQ3
2532	Bee	Texas	48025	Low	Low	High	Med	NOQ3
2533	Bell	Texas	48027	Low	High	Med	Med	Q3
2534	Bexar	Texas	48029	Low	High	Med	Med	Q3
2535	Blanco	Texas	48031	Low	Low	Low	Low	Q3
2536	Borden	Texas	48033	Low	Low	Low	Low	NOQ3
2537	Bosque	Texas	48035	Low	Med	Med	Med	NOQ3
2538	Bowie	Texas	48037	Low	High	Med	Med	Q3
2539	Brazoria	Texas	48039	Low	Low	High	Med	Q3
2540	Brazos	Texas	48041	Low	Low	Med	Low	Q3
2541	Brewster	Texas	48043	Med	Low	Low	Low	NOQ3
2542	Briscoe	Texas	48045	Low	Low	Med	Med	NOQ3
2543	Brooks	Texas	48047	Low	Low	High	Low	Q3
2544	Brown	Texas	48049	Low	Low	Med	Med	NOQ3
2545	Burleson	Texas	48051	Low	Low	Med	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2546	Burnet	Texas	48053	Low	Low	Low	Low	Q3
2547	Caldwell	Texas	48055	Low	High	Med	Med	NOQ3
2548	Calhoun	Texas	48057	Low	Low	High	Med	Q3
2549	Callahan	Texas	48059	Low	Low	Med	Med	NOQ3
2550	Cameron	Texas	48061	Low	Low	High	Med	Q3
2551	Camp	Texas	48063	Low	Low	Med	Med	NOQ3
2552	Carson	Texas	48065	Low	Low	Med	Med	NOQ3
2553	Cass	Texas	48067	Low	Low	Med	Med	NOQ3
2554	Castro	Texas	48069	Low	Low	Med	Med	NOQ3
2555	Chambers	Texas	48071	Low	Low	High	Med	Q3
2556	Cherokee	Texas	48073	Low	Low	Low	Low	NOQ3
2557	Childress	Texas	48075	Low	Low	Med	Med	NOQ3
2558	Clay	Texas	48077	Med	Low	Low	Low	NOQ3
2559	Cochran	Texas	48079	Low	Low	Med	Med	NOQ3
2560	Coke	Texas	48081	Low	Low	Low	Low	NOQ3
2561	Coleman	Texas	48083	Low	Low	Low	Low	NOQ3
2562	Collin	Texas	48085	Low	High	Med	Med	Q3
2563	Collingsworth	Texas	48087	Low	Low	Med	Med	NOQ3
2564	Colorado	Texas	48089	Low	Low	Med	Med	NOQ3
2565	Comal	Texas	48091	Low	High	Med	Low	Q3
2566	Comanche	Texas	48093	Low	Low	Med	Med	NOQ3
2567	Concho	Texas	48095	Low	Low	Low	Low	NOQ3
2568	Cooke	Texas	48097	Low	Med	Med	Med	NOQ3
2569	Coryell	Texas	48099	Low	Med	Low	Low	NOQ3
2570	Cottle	Texas	48101	Low	Low	Low	Low	NOQ3
2571	Crane	Texas	48103	Med	Low	Low	Low	NOQ3
2572	Crockett	Texas	48105	Low	Low	Low	Low	NOQ3
2573	Crosby	Texas	48107	Low	Low	Med	Med	NOQ3
2574	Culberson	Texas	48109	Med	Med	Low	Low	NOQ3
2575	Dallam	Texas	48111	Low	Low	Low	Low	NOQ3
2576	Dallas	Texas	48113	Low	High	Med	Med	Q3
2577	Dawson	Texas	48115	Low	Low	Med	Med	NOQ3
2578	De Witt	Texas	48123	Low	Low	Med	Low	NOQ3
2579	Deaf Smith	Texas	48117	Low	Med	Low	Low	NOQ3
2580	Delta	Texas	48119	Low	High	Low	Low	NOQ3
2581	Denton	Texas	48121	Low	Med	Med	Med	Q3
2582	Dickens	Texas	48125	Low	Low	Low	Low	NOQ3
2583	Dimmit	Texas	48127	Low	Low	Low	Low	NOQ3
2584	Donley	Texas	48129	Low	Low	Med	Med	NOQ3
2585	Duval	Texas	48131	Low	Low	Med	Low	NOQ3
2586	Eastland	Texas	48133	Low	Low	Med	Med	Q3
2587	Ector	Texas	48135	Med	Low	Med	Med	NOQ3
2588	Edwards	Texas	48137	Low	Low	Low	Low	Q3
2589	El Paso	Texas	48141	Med	Low	Low	Low	Q3
2590	Ellis	Texas	48139	Low	High	Med	Med	NOQ3
2591	Erath	Texas	48143	Low	Low	Med	Med	NOQ3
2592	Falls	Texas	48145	Low	High	Low	Low	NOQ3
2593	Fannin	Texas	48147	Low	High	Med	Med	NOQ3
2594	Fayette	Texas	48149	Low	Med	Med	Low	Q3
2595	Fisher	Texas	48151	Low	Low	Med	Med	NOQ3
2596	Floyd	Texas	48153	Low	Low	Med	Med	NOQ3
2597	Foard	Texas	48155	Low	Low	Low	Low	NOQ3
2598	Fort Bend	Texas	48157	Low	Low	High	Med	Q3
2599	Franklin	Texas	48159	Low	High	Med	Med	NOQ3
2600	Freestone	Texas	48161	Low	Low	Low	Low	NOQ3
2601	Frio	Texas	48163	Low	Low	Med	Low	NOQ3
2602	Gaines	Texas	48165	Med	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2603	Galveston	Texas	48167	Low	Low	High	Hig	h Q3
2604	Garza	Texas	48169	Low	Low	Low	Low	NOQ3
2605	Gillespie	Texas	48171	Low	Low	Low	Low	NOQ3
2606	Glasscock	Texas	48173	Low	Low	Low	Low	NOQ3
2607	Goliad	Texas	48175	Low	Low	High	Low	NOQ3
2608	Gonzales	Texas	48177	Low	Med	Med	Low	NOQ3
2609	Gray	Texas	48179	Low	Low	Med	Med	NOQ3
2610	Grayson	Texas	48181	Low	Med	Med	Med	Q3
2611	Gregg	Texas	48183	Low	Low	Med	Med	NOQ3
2612	Grimes	Texas	48185	Low	Low	Med	Low	Q3
2613	Guadalupe	Texas	48187	Low	High	Med	Low	Q3
2614	Hale	Texas	48189	Low	Low	Med	Med	NOQ3
2615	Hall	Texas	48191	Low	Low	Med	Med	NOQ3
2616	Hamilton	Texas	48193	Low	Low	Low	Low	NOQ3
2617	Hansford	Texas	48195	Low	Low	Med	Med	NOQ3
2618	Hardeman	Texas	48197	Low	Low	Med	Med	NOQ3
2619	Hardin	Texas	48199	Low	Low	Med	Low	Q3
2620	Harris	Texas	48201	Low	Med	High	Med	NOQ3
2621	Harrison	Texas	48203	Low	Low	Med	Med	NOQ3
2622	Hartley	Texas	48205	Low	Low	Low	Low	NOQ3
2623	Haskell	Texas	48207	Low	Low	Med	Med	NOQ3
2624	Hays	Texas	48209	Low	High	Med	Low	Q3
2625	Hemphill	Texas	48211	Low	Low	Med	Med	NOQ3
2626	Henderson	Texas	48213	Low	High	Med	Med	NOQ3
2627	Hidalgo	Texas	48215	Low	Low	High	Low	Q3
2628	Hill	Texas	48217	Low	High	Med	Med	NOQ3
2629	Hockley	Texas	48219	Low	Low	Med	Med	NOQ3
2630	Hood	Texas	48221	Low	Low	Med	Med	NOQ3
2631	Hopkins	Texas	48223	Low	High	Med	Med	NOQ3
2632	Houston	Texas	48225	Low	Low	Low	Low	Q3
2633	Howard	Texas	48227	Low	Low	Med	Med	NOQ3
2634	Hudspeth	Texas	48229	Med	High	Low	Low	NOQ3
2635	Hunt	Texas	48231	Low	High	Med	Med	NOQ3
2636	Hutchinson	Texas	48233	Low	Low	Med	Med	NOQ3
2637	Irion	Texas	48235	Low	Low	Low	Low	NOQ3
2638	Jack	Texas	48237	Low	Low	Low	Low	NOQ3
2639	Jackson	Texas	48239	Low	Low	High	Med	Q3
2640	Jasper	Texas	48241	Low	Low	Med	Low	Q3
2641	Jeff Davis	Texas	48243	Med	Med	Low	Low	NOQ3
2642	Jefferson	Texas	48245	Low	Med	High	Med	Q3
2643	Jim Hogg	Texas	48247	Low	Low	Med	Low	NOQ3
2644	Jim Wells	Texas	48249	Low	Low	High	Med	NOQ3
2645	Johnson	Texas	48251	Low	Med	Med	Med	Q3
2646	Jones	Texas	48253	Low	Low	Med	Med	NOQ3
2647	Karnes	Texas	48255	Low	Low	Med	Med	NOQ3
2648	Kaufman	Texas	48257	Low	High	Med	Med	NOQ3
2649	Kendall	Texas	48259	Low	Low	Low	Low	Q3
2650	Kenedy	Texas	48261	Low	Low	High	Low	Q3
2651	Kent	Texas	48263	Low	Low	Low	Low	NOQ3
2652	Kerr	Texas	48265	Low	Low	Low	Low	Q3
2653	Kimble	Texas	48267	Low	Low	Low	Low	NOQ3
2654	King	Texas	48269	Low	Low	Low	Low	NOQ3
2655	Kinney	Texas	48271	Low	Low	Low	Low	NOQ3
2656	Kleberg	Texas	48273	Low	Low	High	Low	Q3
2657	Knox	Texas	48275	Low	Low	Med	Med	NOQ3
2658	La Salle	Texas	48283	Low	Low	Med	Low	NOQ3
2659	Lamar	Texas	48277	Low	High	Med	Med	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2660	Lamb	Texas	48279	Low	Low	Med	Med	NOQ3
2661	Lampasas	Texas	48281	Low	Low	Low	Low	NOQ3
2662	Lavaca	Texas	48285	Low	Low	Med	Low	NOQ3
2663	Lee	Texas	48287	Low	Low	Med	Med	Q3
2664	Leon	Texas	48289	Low	Low	Low	Low	NOQ3
2665	Liberty	Texas	48291	Low	Low	High	Med	Q3
2666	Limestone	Texas	48293	Low	High	Low	Low	NOQ3
2667	Lipscomb	Texas	48295	Low	Low	Low	Low	NOQ3
2668	Live Oak	Texas	48297	Low	Low	Med	Low	NOQ3
2669	Llano	Texas	48299	Low	Low	Low	Low	Q3
2670	Loving	Texas	48301	Med	Low	Low	Low	NOQ3
2671	Lubbock	Texas	48303	Low	Low	Med	Med	Q3
2672	Lynn	Texas	48305	Low	Low	Med	Med	NOQ3
2673	Madison	Texas	48313	Low	Low	Med	Low	Q3
2674	Marion	Texas	48315	Low	Low	Med	Med	NOQ3
2675	Martin	Texas	48317	Low	Low	Med	Med	NOQ3
2676	Mason	Texas	48319	Low	Low	Low	Low	Q3
2677	Matagorda	Texas	48321	Low	Low	High	Med	Q3
2678	Maverick	Texas	48323	Low	Low	Low	Low	NOQ3
2679	Mcculloch	Texas	48307	Low	Low	Low	Low	NOQ3
2680	Mclennan	Texas	48309	Low	High	Med	Med	Q3
2681	Mcmullen	Texas	48311	Low	Low	Med	Low	NOQ3
2682	Medina	Texas	48325	Low	High	Low	Low	Q3
2683	Menard	Texas	48327	Low	Low	Low	Low	NOQ3
2684	Midland	Texas	48329	Low	Low	Med	Med	NOQ3
2685	Milam	Texas	48331	Low	High	Low	Low	NOQ3
2686	Mills	Texas	48333	Low	Low	Low	Low	NOQ3
2687	Mitchell	Texas	48335	Low	Low	Med	Med	NOQ3
2688	Montague	Texas	48337	Low	Low	Med	Med	NOQ3
2689	Montgomery	Texas	48339	Low	Low	Med	Med	Q3
2690	Moore	Texas	48341	Low	Low	Med	Med	NOQ3
2691	Morris	Texas	48343	Low	Low	Med	Med	NOQ3
2692	Motley	Texas	48345	Low	Low	Low	Low	NOQ3
2693	Nacogdoches	Texas	48347	Low	Low	Med	Med	Q3
2694	Navarro	Texas	48349	Low	High	Med	Med	NOQ3
2695	Newton	Texas	48351	Low	Low	Med	Low	NOQ3
2696	Nolan	Texas	48353	Low	Low	Med	Med	NOQ3
2697	Nueces	Texas	48355	Low	Low	High	Med	Q3
2698	Ochiltree	Texas	48357	Low	Low	Med	Med	NOQ3
2699	Oldham	Texas	48359	Low	Low	Low	Low	NOQ3
2700	Orange	Texas	48361	Low	Med	High	Med	Q3
2701	Palo Pinto	Texas	48363	Low	Low	Med	Med	NOQ3
2702	Panola	Texas	48365	Low	Low	Med	Med	NOQ3
2703	Parker	Texas	48367	Low	Low	Med	Med	NOQ3
2704	Parmer	Texas	48369	Low	Low	Med	Med	NOQ3
2705	Pecos	Texas	48371	Med	Low	Low	Low	NOQ3
2706	Polk	Texas	48373	Low	Low	Med	Low	Q3
2707	Potter	Texas	48375	Low	Low	Med	Med	Q3
2708	Presidio	Texas	48377	Med	Low	Low	Low	NOQ3
2709	Rains	Texas	48379	Low	Low	Med	Med	NOQ3
2710	Randall	Texas	48381	Low	Low	Med	Med	NOQ3
2711	Reagan	Texas	48383	Low	Low	Low	Low	NOQ3
2712	Real	Texas	48385	Low	Low	Low	Low	Q3
2713	Red River	Texas	48387	Low	High	Low	Low	NOQ3
2714	Reeves	Texas	48389	Med	Low	Low	Low	NOQ3
2715	Refugio	Texas	48391	Low	Low	High	Low	NOQ3
2716	Roberts	Texas	48393	Low	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2717	Robertson	Texas	48395	Low	Low	Low	Low	NOQ3
2718	Rockwall	Texas	48397	Low	High	Med	Med	NOQ3
2719	Runnels	Texas	48399	Low	Low	Med	Med	NOQ3
2720	Rusk	Texas	48401	Low	Low	Med	Med	NOQ3
2721	Sabine	Texas	48403	Low	Low	Med	Low	NOQ3
2722	San Augustine	Texas	48405	Low	Low	Med	Low	Q3
2723	San Jacinto	Texas	48407	Low	Low	Med	Low	Q3
2724	San Patricio	Texas	48409	Low	Low	High	Med	Q3
2725	San Saba	Texas	48411	Low	Low	Low	Low	NOQ3
2726	Schleicher	Texas	48413	Low	Low	Low	Low	NOQ3
2727	Scurry	Texas	48415	Low	Low	Med	Med	NOQ3
2728	Shackelford	Texas	48417	Low	Low	Low	Low	NOQ3
2729	Shelby	Texas	48419	Low	Low	Med	Med	Q3
2730	Sherman	Texas	48421	Low	Low	Med	Med	NOQ3
2731	Smith	Texas	48423	Low	Low	Med	Med	NOQ3
2732	Somervell	Texas	48425	Low	Low	Low	Low	NOQ3
2733	Starr	Texas	48427	Low	Low	Med	Low	NOQ3
2734	Stephens	Texas	48429	Low	Low	Low	Low	NOQ3
2735	Sterling	Texas	48431	Low	Low	Low	Low	NOQ3
2736	Stonewall	Texas	48433	Low	Low	Low	Low	NOQ3
2737	Sutton	Texas	48435	Low	Low	Low	Low	NOQ3
2738	Swisher	Texas	48437	Low	Low	Med	Med	NOQ3
2739	Tarrant	Texas	48439	Low	Med	Med	Med	Q3
2740	Taylor	Texas	48441	Low	Low	Med	Med	NOQ3
2741	Terrell	Texas	48443	Low	Low	Low	Low	NOQ3
2742	Terry	Texas	48445	Low	Low	Med	Med	NOQ3
2743	Throckmorton	Texas	48447	Low	Low	Med	Med	NOQ3
2744	Titus	Texas	48449	Low	Low	Med	Med	NOQ3
2745	Tom Green	Texas	48451	Low	Low	Low	Low	NOQ3
2746	Travis	Texas	48453	Low	High	Med	Med	Q3
2747	Trinity	Texas	48455	Low	Low	Med	Low	Q3
2748	Tyler	Texas	48457	Low	Low	Med	Low	NOQ3
2749	Upshur	Texas	48459	Low	Low	Med	Med	NOQ3
2750	Upton	Texas	48461	Low	Low	Low	Low	NOQ3
2751	Uvalde	Texas	48463	Low	Low	Low	Low	Q3
2752	Val Verde	Texas	48465	Low	Low	Low	Low	NOQ3
2753	Van Zandt	Texas	48467	Low	Low	Low	Low	NOQ3
2754	Victoria	Texas	48469	Low	Low	High	Med	Q3
2755	Walker	Texas	48471	Low	Low	Med	Low	Q3
2756	Waller	Texas	48473	Low	Low	Med	Med	Q3
2757	Ward	Texas	48475	Med	Low	Low	Low	NOQ3
2758	Washington	Texas	48477	Low	Low	Med	Med	Q3
2759	Webb	Texas	48479	Low	Low	Med	Low	Q3
2760	Wharton	Texas	48481	Low	Low	High	Med	Q3
2761	Wheeler	Texas	48483	Low	Low	Med	Med	NOQ3
2762	Wichita	Texas	48485	Low	Low	Med	Med	Q3
2763	Wilbarger	Texas	48487	Low	Low	Med	Med	NOQ3
2764	Willacy	Texas	48489	Low	Low	High	Low	Q3
2765	Williamson	Texas	48491	Low	High	Med	Med	NOQ3
2766	Wilson	Texas	48493	Low	Med	Med	Low	NOQ3
2767	Winkler	Texas	48495	Med	Low	Low	Low	NOQ3
2768	Wise	Texas	48497	Low	Low	Med	Med	NOQ3
2769	Wood	Texas	48499	Low	Low	Med	Med	NOQ3
2770	Yoakum	Texas	48501	Low	Low	Low	Low	NOQ3
2771	Young	Texas	48503	Low	Low	Med	Med	NOQ3
2772	Zapata	Texas	48505	Low	Low	Med	Low	NOQ3
2773	Zavala	Texas	48507	Low	Low	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2774	Beaver	Utah	49001	Med	High	Low	Low	NOQ3
2775	Box Elder	Utah	49003	High	High	Low	Low	NOQ3
2776	Cache	Utah	49005	High	High	Low	Low	NOQ3
2777	Carbon	Utah	49007	Med	Low	Low	Low	NOQ3
2778	Daggett	Utah	49009	Med	High	Low	Low	NOQ3
2779	Davis	Utah	49011	High	High	Low	Low	NOQ3
2780	Duchesne	Utah	49013	Med	High	Low	Low	NOQ3
2781	Emery	Utah	49015	Med	High	Low	Low	NOQ3
2782	Garfield	Utah	49017	Med	High	Low	Low	NOQ3
2783	Grand	Utah	49019	Med	High	Low	Low	NOQ3
2784	Iron	Utah	49021	Med	High	Low	Low	NOQ3
2785	Juab	Utah	49023	Med	High	Low	Low	NOQ3
2786	Kane	Utah	49025	Med	High	Low	Low	NOQ3
2787	Millard	Utah	49027	Med	High	Low	Low	NOQ3
2788	Morgan	Utah	49029	High	High	Low	Low	NOQ3
2789	Piute	Utah	49031	Med	High	Low	Low	NOQ3
2790	Rich	Utah	49033	Med	High	Low	Low	NOQ3
2791	Salt Lake	Utah	49035	High	High	Low	Low	Q3
2792	San Juan	Utah	49037	Med	High	Low	Low	NOQ3
2793	Sanpete	Utah	49039	Med	High	Low	Low	NOQ3
2794	Sevier	Utah	49041	Med	High	Low	Low	NOQ3
2795	Summit	Utah	49043	High	High	Low	Low	NOQ3
2796	Tooele	Utah	49045	Med	Low	Low	Low	NOQ3
2797	Uintah	Utah	49047	Med	High	Low	Low	NOQ3
2798	Utah	Utah	49049	High	High	Low	Low	Q3
2799	Wasatch	Utah	49051	Med	High	Low	Low	NOQ3
2800	Washington	Utah	49053	Med	Med	Low	Low	NOQ3
2801	Wayne	Utah	49055	Med	High	Low	Low	NOQ3
2802	Weber	Utah	49057	High	High	Low	Low	NOQ3
2803	Addison	Vermont	50001	Med	High	Low	Low	NOQ3
2804	Bennington	Vermont	50003	Med	High	Low	Low	NOQ3
2805	Caledonia	Vermont	50005	Med	High	Low	Low	NOQ3
2806	Chittenden	Vermont	50007	Med	High	Low	Low	NOQ3
2807	Essex	Vermont	50009	Med	Low	Low	Low	NOQ3
2808	Franklin	Vermont	50011	Med	High	Low	Low	NOQ3
2809	Grand Isle	Vermont	50013	Med	High	Low	Low	NOQ3
2810	Lamoille	Vermont	50015	Med	High	Low	Low	NOQ3
2811	Orange	Vermont	50017	Med	High	Low	Low	NOQ3
2812	Orleans	Vermont	50019	Med	High	Low	Low	NOQ3
2813	Rutland	Vermont	50021	Med	High	Low	Low	Q3
2814	Washington	Vermont	50023	Med	High	Low	Low	Q3
2815	Windham	Vermont	50025	Med	High	Low	Low	Q3
2816	Windsor	Vermont	50027	Med	High	Low	Low	Q3
2817	Accomack	Virginia	51001	Low	Low	High	Low	Q3
2818	Albemarle	Virginia	51003	Med	High	Low	Low	Q3
2819	Alexandria	Virginia	51510	Low	High	Low	Low	Q3
2820	Alleghany	Virginia	51005	Med	High	Low	Low	NOQ3
2821	Amelia	Virginia	51007	Med	Low	Low	Low	NOQ3
2822	Amherst	Virginia	51009	Med	High	Low	Low	NOQ3
2823	Appomattox	Virginia	51011	Med	High	Low	Low	NOQ3
2824	Arlington	Virginia	51013	Low	High	Low	Low	NOQ3
2825	Augusta	Virginia	51015	Med	High	Low	Low	Q3
2826	Bath	Virginia	51017	Med	High	Low	Low	Q3
2827	Bedford	Virginia	51019	Med	High	Low	Low	Q3
2828	Bedford City	Virginia	51515	Med	High	Low	Low	Q3
2829	Bland	Virginia	51021	Med	Med	Low	Low	NOQ3
2830	Botetourt	Virginia	51023	Med	High	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2831	Bristol City	Virginia	51520	Med	High	Med	Med	NOQ3
2832	Brunswick	Virginia	51025	Med	Low	Low	Low	Q3
2833	Buchanan	Virginia	51027	Med	High	Low	Low	Q3
2834	Buckingham	Virginia	51029	Med	High	Low	Low	NOQ3
2835	Buena Vista	Virginia	51530	Med	High	Low	Low	Q3
2836	Campbell	Virginia	51031	Med	High	Low	Low	Q3
2837	Caroline	Virginia	51033	Med	High	Low	Low	NOQ3
2838	Carroll	Virginia	51035	Med	High	Low	Low	NOQ3
2839	Charles City	Virginia	51036	Med	High	Low	Low	NOQ3
2840	Charlotte	Virginia	51037	Med	Low	Low	Low	NOQ3
2841	Charlottsville	Virginia	51540	Med	High	Low	Low	Q3
2842	Chesapeake	Virginia	51550	Low	Low	High	Low	NOQ3
2843	Chesterfield	Virginia	51041	Med	High	Med	Med	NOQ3
2844	Clarke	Virginia	51043	Low	High	Low	Low	NOQ3
2845	Clifton Forge	Virginia	51560	Med	High	Low	Low	NOQ3
2846	Colonial Hghts Cty	Virginia	51570	Med	High	Low	Low	NOQ3
2847	Covington City	Virginia	51580	Med	High	Low	Low	NOQ3
2848	Craig	Virginia	51045	Med	High	Low	Low	NOQ3
2849	Culpeper	Virginia	51047	Med	High	Low	Low	Q3
2850	Cumberland	Virginia	51049	Med	Low	Low	Low	NOQ3
2851	Danville City	Virginia	51590	Low	Med	Low	Low	Q3
2852	Dickenson	Virginia	51051	Med	High	Low	Low	NOQ3
2853	Dinwiddie	Virginia	51053	Med	Low	Low	Low	NOQ3
2854	Emporia City	Virginia	51595	Low	Low	High	Hig	h NOQ
2855	Essex	Virginia	51057	Low	Med	Low	Low	NOQ3
2856	Fairfax	Virginia	51059	Low	High	Med	Med	NOQ3
2857	Fairfax City	Virginia	51600	Low	Low	Low	Low	Q3
2858	Falls Church	Virginia	51610	Low	Low	High	Hig	h NOQ
2859	Fauquier	Virginia	51061	Med	High	Low	Low	NOQ3
2860	Floyd	Virginia	51063	Med	High	Low	Low	NOQ3
2861	Fluvanna	Virginia	51065	Med	High	Low	Low	Q3
2862	Franklin	Virginia	51067	Med	High	Low	Low	NOQ3
2863	Franklin City	Virginia	51620	Low	Low	High	Hig	h NOQ
2864	Frederick	Virginia	51069	Low	High	Low	Low	NOQ3
2865	Fredericksburg	Virginia	51630	Med	High	Low	Low	NOQ3
2866	Galax City	Virginia	51640	Med	High	Low	Low	NOQ3
2867	Giles	Virginia	51071	Med	High	Low	Low	Q3
2868	Gloucester	Virginia	51073	Low	Med	Med	Low	Q3
2869	Goochland	Virginia	51075	Med	Low	Low	Low	NOQ3
2870	Grayson	Virginia	51077	Med	High	Low	Low	NOQ3
2871	Greene	Virginia	51079	Med	High	Low	Low	Q3
2872	Greensville	Virginia	51081	Low	Low	Med	Low	NOQ3
2873	Halifax	Virginia	51083	Med	High	Low	Low	Q3
2874	Hampton City	Virginia	51650	Low	Med	High	Low	Q3
2875	Hanover	Virginia	51085	Med	High	Low	Low	NOQ3
2876	Harrisonburg	Virginia	51660	Med	High	Low	Low	Q3
2877	Henrico	Virginia	51087	Med	High	Low	Low	NOQ3
2878	Henry	Virginia	51089	Med	High	Low	Low	NOQ3
2879	Highland	Virginia	51091	Low	High	Low	Low	NOQ3
2880	Hopewell City	Virginia	51670	Med	High	Med	Med	NOQ3
2881	Isle Of Wight	Virginia	51093	Low	Med	Med	Low	NOQ3
2882	James City	Virginia	51095	Low	Med	Med	Low	NOQ3
2883	King And Queen	Virginia	51097	Med	Low	Med	Low	NOQ3
2884	King George	Virginia	51099	Low	High	Low	Low	NOQ3
2885	King William	Virginia	51101	Med	High	Low	Low	NOQ3
2886	Lancaster	Virginia	51103	Low	Med	Med	Low	Q3
2887	Lee	Virginia	51105	Med	High	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2888	Lexington City	Virginia	51678	Med	Low	Low	Low	Q3
2889	Loudoun	Virginia	51107	Low	High	Low	Low	NOQ3
2890	Louisa	Virginia	51109	Med	Low	Low	Low	NOQ3
2891	Lunenburg	Virginia	51111	Med	Low	Low	Low	NOQ3
2892	Lynchburg City	Virginia	51680	Med	High	Low	Low	Q3
2893	Madison	Virginia	51113	Med	High	Low	Low	Q3
2894	Manassas City	Virginia	51683	Low	Low	Low	Low	Q3
2895	Manassas Park	Virginia	51685	Low	Low	Low	Low	Q3
2896	Martinsville	Virginia	51690	Med	High	Low	Low	NOQ3
2897	Mathews	Virginia	51115	Low	Low	High	Low	Q3
2898	Mecklenburg	Virginia	51117	Med	Med	Low	Low	NOQ3
2899	Middlesex	Virginia	51119	Low	Med	Med	Low	Q3
2900	Montgomery	Virginia	51121	Med	High	Low	Low	NOQ3
2901	Nelson	Virginia	51125	Med	High	Low	Low	NOQ3
2902	New Kent	Virginia	51127	Med	Med	Low	Low	NOQ3
2903	Newport News	Virginia	51700	Low	Med	Med	Med	Q3
2904	Norfolk City	Virginia	51710	Low	Low	High	Hig	h Q3
2905	Northampton	Virginia	51131	Low	Low	High	Med	Q3
2906	Northumberland	Virginia	51133	Low	Med	Med	Low	Q3
2907	Norton City	Virginia	51720	Med	High	Low	Low	Q3
2908	Nottoway	Virginia	51135	Med	Low	Low	Low	NOQ3
2909	Orange	Virginia	51137	Med	High	Low	Low	Q3
2910	Page	Virginia	51139	Med	High	Low	Low	NOQ3
2911	Patrick	Virginia	51141	Med	High	Low	Low	NOQ3
2912	Petersburg	Virginia	51730	Med	High	High	Hig	h NOQ
2913	Pittsylvania	Virginia	51143	Med	High	Low	Low	Q3
2914	Poquoson City	Virginia	51735	Low	Low	High	Low	Q3
2915	Portsmouth	Virginia	51740	Low	Low	High	Med	Q3
2916	Powhatan	Virginia	51145	Med	Low	Low	Low	NOQ3
2917	Prince Edward	Virginia	51147	Med	High	Low	Low	NOQ3
2918	Prince George	Virginia	51149	Med	High	Low	Low	NOQ3
2919	Prince William	Virginia	51153	Low	High	Low	Low	Q3
2920	Pulaski	Virginia	51155	Med	High	Low	Low	NOQ3
2921	Radford City	Virginia	51750	Med	Med	Low	Low	NOQ3
2922	Rappahannock	Virginia	51157	Med	High	Low	Low	Q3
2923	Richmond	Virginia	51159	Low	Med	Med	Low	Q3
2924	Richmond City	Virginia	51760	Med	High	Med	Med	NOQ3
2925	Roanoke	Virginia	51161	Med	High	Low	Low	Q3
2926	Roanoke City	Virginia	51770	Med	High	Med	Med	Q3
2927	Rockbridge	Virginia	51163	Med	High	Low	Low	Q3
2928	Rockingham	Virginia	51165	Med	High	Low	Low	Q3
2929	Russell	Virginia	51167	Med	High	Low	Low	NOQ3
2930	Salem City	Virginia	51775	Med	Med	Low	Low	Q3
2931	Scott	Virginia	51169	Med	High	Low	Low	NOQ3
2932	Shenandoah	Virginia	51171	Med	High	Low	Low	NOQ3
2933	Smyth	Virginia	51173	Med	High	Low	Low	NOQ3
2934	South Boston	Virginia	51780	Low	Med	High	Hig	h Q3
2935	Southampton	Virginia	51175	Low	Low	Med	Low	NOQ3
2936	Spotsylvania	Virginia	51177	Med	High	Low	Low	NOQ3
2937	Stafford	Virginia	51179	Med	High	Low	Low	NOQ3
2938	Staunton City	Virginia	51790	Med	Low	Low	Low	Q3
2939	Suffolk City	Virginia	51800	Low	Med	Med	Low	NOQ3
2940	Surry	Virginia	51181	Low	Med	Med	Low	NOQ3
2941	Sussex	Virginia	51183	Low	High	Med	Low	NOQ3
2942	Tazewell	Virginia	51185	Med	High	Low	Low	NOQ3
2943	Virginia Beach	Virginia	51810	Low	Low	High	Med	Q3
2944	Warren	Virginia	51187	Low	High	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
2945	Washington	Virginia	51191	Med	High	Low	Low	NOQ3
2946	Waynesboro	Virginia	51820	Med	High	Low	Low	Q3
2947	Westmoreland	Virginia	51193	Low	Med	Low	Low	Q3
2948	Williamsburg	Virginia	51830	Low	Low	Med	Low	NOQ3
2949	Winchester	Virginia	51840	Low	Med	Low	Low	NOQ3
2950	Wise	Virginia	51195	Med	High	Low	Low	Q3
2951	Wythe	Virginia	51197	Med	High	Low	Low	NOQ3
2952	York	Virginia	51199	Low	Med	High	Low	Q3
2953	Adams	Washington	53001	Med	Med	Low	Low	Q3
2954	Asotin	Washington	53003	Med	High	Low	Low	Q3
2955	Benton	Washington	53005	Med	High	Low	Low	Q3
2956	Chelan	Washington	53007	Med	High	Low	Low	Q3
2957	Clallam	Washington	53009	High	High	Low	Low	Q3
2958	Clark	Washington	53011	Med	High	Low	Low	Q3
2959	Columbia	Washington	53013	Med	High	Low	Low	Q3
2960	Cowlitz	Washington	53015	Med	High	Low	Low	Q3
2961	Douglas	Washington	53017	Med	High	Low	Low	Q3
2962	Ferry	Washington	53019	Med	High	Low	Low	Q3
2963	Franklin	Washington	53021	Med	High	Low	Low	Q3
2964	Garfield	Washington	53023	Med	High	Low	Low	Q3
2965	Grant	Washington	53025	Med	High	Low	Low	Q3
2966	Grays Harbor	Washington	53027	High	High	Low	Low	Q3
2967	Island	Washington	53029	High	High	Low	Low	Q3
2968	Jefferson	Washington	53031	High	High	Low	Low	Q3
2969	King	Washington	53033	High	High	Low	Low	Q3
2970	Kitsap	Washington	53035	High	High	Low	Low	Q3
2971	Kittitas	Washington	53037	Med	High	Low	Low	Q3
2972	Klickitat	Washington	53039	Med	High	Low	Low	Q3
2973	Lewis	Washington	53041	Med	High	Low	Low	Q3
2974	Lincoln	Washington	53043	Med	High	Low	Low	Q3
2975	Mason	Washington	53045	Med	High	Low	Low	Q3
2976	Okanogan	Washington	53047	Med	High	Low	Low	Q3
2977	Pacific	Washington	53049	High	High	Low	Low	Q3
2978	Pend Oreille	Washington	53051	Med	Low	Low	Low	Q3
2979	Pierce	Washington	53053	Med	High	Low	Low	Q3
2980	San Juan	Washington	53055	Med	Low	Low	Low	Q3
2981	Skagit	Washington	53057	Med	Med	Low	Low	Q3
2982	Skamania	Washington	53059	Med	High	Low	Low	Q3
2983	Snohomish	Washington	53061	High	High	Low	Low	Q3
2984	Spokane	Washington	53063	Med	High	Low	Low	Q3
2985	Stevens	Washington	53065	Med	High	Low	Low	Q3
2986	Thurston	Washington	53067	Med	High	Low	Low	Q3
2987	Wahkiakum	Washington	53069	Med	High	Low	Low	Q3
2988	Walla Walla	Washington	53071	Med	Low	Low	Low	Q3
2989	Whatcom	Washington	53073	Med	High	Low	Low	Q3
2990	Whitman	Washington	53075	Med	Low	Low	Low	Q3
2991	Yakima	Washington	53077	Med	High	Low	Low	Q3
2992	Barbour	West Virginia	54001	Low	High	Low	Low	Q3
2993	Berkeley	West Virginia	54003	Low	High	Low	Low	NOQ3
2994	Boone	West Virginia	54005	Med	High	Low	Low	NOQ3
2995	Braxton	West Virginia	54007	Low	High	Low	Low	Q3
2996	Brooke	West Virginia	54009	Low	High	Low	Low	Q3
2997	Cabell	West Virginia	54011	Low	High	Low	Low	Q3
2998	Calhoun	West Virginia	54013	Low	High	Low	Low	Q3
2999	Clay	West Virginia	54015	Low	High	Low	Low	Q3
3000	Doddridge	West Virginia	54017	Low	High	Low	Low	NOQ3
3001	Fayette	West Virginia	54019	Med	High	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
3002	Gilmer	West Virginia	54021	Low	High	Low	Low	Q3
3003	Grant	West Virginia	54023	Low	High	Low	Low	Q3
3004	Greenbrier	West Virginia	54025	Med	High	Low	Low	Q3
3005	Hampshire	West Virginia	54027	Low	High	Low	Low	NOQ3
3006	Hancock	West Virginia	54029	Low	High	Low	Low	Q3
3007	Hardy	West Virginia	54031	Low	High	Low	Low	Q3
3008	Harrison	West Virginia	54033	Low	High	Low	Low	Q3
3009	Jackson	West Virginia	54035	Low	High	Low	Low	Q3
3010	Jefferson	West Virginia	54037	Low	High	Low	Low	NOQ3
3011	Kanawha	West Virginia	54039	Med	High	Low	Low	Q3
3012	Lewis	West Virginia	54041	Low	High	Low	Low	Q3
3013	Lincoln	West Virginia	54043	Med	High	Low	Low	Q3
3014	Logan	West Virginia	54045	Med	High	Low	Low	Q3
3015	Marion	West Virginia	54049	Low	High	Low	Low	NOQ3
3016	Marshall	West Virginia	54051	Low	High	Low	Low	Q3
3017	Mason	West Virginia	54053	Low	High	Low	Low	Q3
3018	Mcdowell	West Virginia	54047	Med	High	Low	Low	Q3
3019	Mercer	West Virginia	54055	Med	High	Low	Low	NOQ3
3020	Mineral	West Virginia	54057	Low	High	Low	Low	NOQ3
3021	Mingo	West Virginia	54059	Med	High	Low	Low	Q3
3022	Monongalia	West Virginia	54061	Low	High	Low	Low	NOQ3
3023	Monroe	West Virginia	54063	Med	High	Low	Low	NOQ3
3024	Morgan	West Virginia	54065	Low	High	Low	Low	NOQ3
3025	Nicholas	West Virginia	54067	Med	High	Low	Low	NOQ3
3026	Ohio	West Virginia	54069	Low	High	Low	Low	Q3
3027	Pendleton	West Virginia	54071	Low	High	Low	Low	NOQ3
3028	Pleasants	West Virginia	54073	Low	High	Low	Low	NOQ3
3029	Pocahontas	West Virginia	54075	Med	High	Low	Low	NOQ3
3030	Preston	West Virginia	54077	Low	High	Low	Low	NOQ3
3031	Putnam	West Virginia	54079	Low	High	Low	Low	Q3
3032	Raleigh	West Virginia	54081	Med	High	Low	Low	Q3
3033	Randolph	West Virginia	54083	Low	High	Low	Low	Q3
3034	Ritchie	West Virginia	54085	Low	High	Low	Low	NOQ3
3035	Roane	West Virginia	54087	Low	High	Low	Low	Q3
3036	Summers	West Virginia	54089	Med	High	Low	Low	Q3
3037	Taylor	West Virginia	54091	Low	High	Low	Low	NOQ3
3038	Tucker	West Virginia	54093	Low	High	Low	Low	Q3
3039	Tyler	West Virginia	54095	Low	High	Low	Low	Q3
3040	Upshur	West Virginia	54097	Low	High	Low	Low	Q3
3041	Wayne	West Virginia	54099	Med	High	Low	Low	Q3
3042	Webster	West Virginia	54101	Low	High	Low	Low	NOQ3
3043	Wetzel	West Virginia	54103	Low	High	Low	Low	Q3
3044	Wirt	West Virginia	54105	Low	High	Low	Low	Q3
3045	Wood	West Virginia	54107	Low	High	Low	Low	Q3
3046	Wyoming	West Virginia	54109	Med	High	Low	Low	Q3
3047	Adams	Wisconsin	55001	Low	Med	Med	Med	NOQ3
3048	Ashland	Wisconsin	55003	Low	Med	Low	Low	NOQ3
3049	Barron	Wisconsin	55005	Low	Low	Med	Med	NOQ3
3050	Bayfield	Wisconsin	55007	Low	Med	Low	Low	Q3
3051	Brown	Wisconsin	55009	Low	Med	Med	Med	Q3
3052	Buffalo	Wisconsin	55011	Low	High	Low	Low	NOQ3
3053	Burnett	Wisconsin	55013	Low	Low	Low	Low	NOQ3
3054	Calumet	Wisconsin	55015	Low	Med	Med	Med	Q3
3055	Chippewa	Wisconsin	55017	Low	Low	Med	Med	Q3
3056	Clark	Wisconsin	55019	Low	Low	Low	Low	Q3
3057	Columbia	Wisconsin	55021	Low	Med	Med	Med	NOQ3
3058	Crawford	Wisconsin	55023	Low	High	Low	Low	NOQ3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
3059	Dane	Wisconsin	55025	Low	Med	Med	Med	Q3
3060	Dodge	Wisconsin	55027	Low	Med	Med	Med	Q3
3061	Door	Wisconsin	55029	Low	Med	Low	Low	NOQ3
3062	Douglas	Wisconsin	55031	Low	High	Low	Low	NOQ3
3063	Dunn	Wisconsin	55033	Low	Low	Low	Low	NOQ3
3064	Eau Claire	Wisconsin	55035	Low	Low	Med	Med	Q3
3065	Florence	Wisconsin	55037	Low	Low	Low	Low	NOQ3
3066	Fond Du Lac	Wisconsin	55039	Low	Med	Med	Med	Q3
3067	Forest	Wisconsin	55041	Low	Low	Low	Low	NOQ3
3068	Grant	Wisconsin	55043	Low	High	Med	Med	NOQ3
3069	Green	Wisconsin	55045	Low	Med	Med	Med	NOQ3
3070	Green Lake	Wisconsin	55047	Low	Med	Med	Med	NOQ3
3071	Iowa	Wisconsin	55049	Low	Med	Low	Low	NOQ3
3072	Iron	Wisconsin	55051	Low	Med	Low	Low	NOQ3
3073	Jackson	Wisconsin	55053	Low	Low	Low	Low	NOQ3
3074	Jefferson	Wisconsin	55055	Low	Low	Med	Med	Q3
3075	Juneau	Wisconsin	55057	Low	Med	Med	Med	NOQ3
3076	Kenosha	Wisconsin	55059	Low	High	Low	Low	NOQ3
3077	Kewaunee	Wisconsin	55061	Low	Med	Med	Med	NOQ3
3078	La Crosse	Wisconsin	55063	Low	High	Low	Low	Q3
3079	Lafayette	Wisconsin	55065	Low	Med	Med	Med	NOQ3
3080	Langlade	Wisconsin	55067	Low	Low	Low	Low	NOQ3
3081	Lincoln	Wisconsin	55069	Low	Low	Low	Low	NOQ3
3082	Manitowoc	Wisconsin	55071	Low	Med	Med	Med	Q3
3083	Marathon	Wisconsin	55073	Low	Low	Low	Low	Q3
3084	Marinette	Wisconsin	55075	Low	Low	Low	Low	Q3
3085	Marquette	Wisconsin	55077	Low	Med	Med	Med	NOQ3
3086	Menominee	Wisconsin	55078	Low	Low	Low	Low	NOQ3
3087	Milwaukee	Wisconsin	55079	Low	Med	Med	Med	Q3
3088	Monroe	Wisconsin	55081	Low	Med	Low	Low	NOQ3
3089	Oconto	Wisconsin	55083	Low	Med	Low	Low	NOQ3
3090	Oneida	Wisconsin	55085	Low	Low	Low	Low	NOQ3
3091	Outagamie	Wisconsin	55087	Low	Med	Low	Low	Q3
3092	Ozaukee	Wisconsin	55089	Low	Med	Low	Low	Q3
3093	Pepin	Wisconsin	55091	Low	High	Low	Low	NOQ3
3094	Pierce	Wisconsin	55093	Low	High	Low	Low	NOQ3
3095	Polk	Wisconsin	55095	Low	Low	Low	Low	NOQ3
3096	Portage	Wisconsin	55097	Low	Low	Low	Low	NOQ3
3097	Price	Wisconsin	55099	Low	Low	Low	Low	NOQ3
3098	Racine	Wisconsin	55101	Low	High	Med	Med	Q3
3099	Richland	Wisconsin	55103	Low	Low	Low	Low	NOQ3
3100	Rock	Wisconsin	55105	Low	Low	Med	Med	NOQ3
3101	Rusk	Wisconsin	55107	Low	Low	Low	Low	NOQ3
3102	Sauk	Wisconsin	55111	Low	Med	Low	Low	NOQ3
3103	Sawyer	Wisconsin	55113	Low	Low	Low	Low	NOQ3
3104	Shawano	Wisconsin	55115	Low	Med	Low	Low	NOQ3
3105	Sheboygan	Wisconsin	55117	Low	Med	Low	Low	NOQ3
3106	St Croix	Wisconsin	55109	Low	Low	Med	Med	NOQ3
3107	Taylor	Wisconsin	55119	Low	Low	Low	Low	NOQ3
3108	Trempealeau	Wisconsin	55121	Low	High	Low	Low	NOQ3
3109	Vernon	Wisconsin	55123	Low	High	Low	Low	NOQ3
3110	Vilas	Wisconsin	55125	Low	Low	Low	Low	NOQ3
3111	Walworth	Wisconsin	55127	Low	Low	Med	Med	NOQ3
3112	Washburn	Wisconsin	55129	Low	Low	Low	Low	Q3
3113	Washington	Wisconsin	55131	Low	Low	Low	Low	NOQ3
3114	Waukesha	Wisconsin	55133	Low	Low	Med	Med	Q3
3115	Waupaca	Wisconsin	55135	Low	Low	Low	Low	Q3

ID	County	State	FIPS	EQ	LS	Wind	Torn	Flood
3116	Waushara	Wisconsin	55137	Low	Low	Low	Low	NOQ3
3117	Winnebago	Wisconsin	55139	Low	Med	Low	Low	Q3
3118	Wood	Wisconsin	55141	Low	Low	Low	Low	Q3
3119	Albany	Wyoming	56001	Med	Med	Low	Low	Q3
3120	Big Horn	Wyoming	56003	Med	High	Low	Low	NOQ3
3121	Campbell	Wyoming	56005	Med	High	Low	Low	NOQ3
3122	Carbon	Wyoming	56007	Med	High	Low	Low	NOQ3
3123	Converse	Wyoming	56009	Med	Med	Low	Low	NOQ3
3124	Crook	Wyoming	56011	Med	High	Low	Low	NOQ3
3125	Fremont	Wyoming	56013	Med	High	Low	Low	NOQ3
3126	Goshen	Wyoming	56015	Med	Med	Med	Med	NOQ3
3127	Hot Springs	Wyoming	56017	Med	High	Low	Low	NOQ3
3128	Johnson	Wyoming	56019	Med	High	Low	Low	NOQ3
3129	Laramie	Wyoming	56021	Med	Med	Med	Med	NOQ3
3130	Lincoln	Wyoming	56023	High	High	Low	Low	NOQ3
3131	Natrona	Wyoming	56025	Med	High	Low	Low	Q3
3132	Niobrara	Wyoming	56027	Med	High	Low	Low	NOQ3
3133	Park	Wyoming	56029	High	High	Low	Low	NOQ3
3134	Platte	Wyoming	56031	Med	Med	Low	Low	NOQ3
3135	Sheridan	Wyoming	56033	Med	High	Low	Low	NOQ3
3136	Sublette	Wyoming	56035	High	High	Low	Low	NOQ3
3137	Sweetwater	Wyoming	56037	Med	High	Low	Low	Q3
3138	Teton	Wyoming	56039	High	High	Low	Low	NOQ3
3139	Uinta	Wyoming	56041	High	High	Low	Low	NOQ3
3140	Washakie	Wyoming	56043	Med	High	Low	Low	NOQ3
3141	Weston	Wyoming	56045	Med	High	Low	Low	NOQ3