

Executive Analysis of Fire Service Operations in Emergency Management

Developing a Rapid Damage Assessment Procedure

for Klamath County Fire District No. 1

David K. Hard

Klamath County Fire District No. 1

Klamath Falls, Oregon

May 2007

CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

ABSTRACT

The problem was that an immediate damage assessment procedure did not exist in the Klamath County Emergency Operations Plan and following 1993 earthquakes requests for assistance were disorganized. The project purpose was to create an immediate damage assessment procedure for Klamath County that is discipline generic. Using action research this project created an immediate damage assessment procedure and answered what are the areas, facilities, and infrastructure that require immediate damage assessment; who needs the critical information from immediate damage assessment; what models currently exist in similar counties in the region; and what are the key components in an immediate damage assessment procedure? Literature was reviewed and a questionnaire sent to all agencies. The results were a procedure and form. Recommendations were training and a permanent EOC.

TABLE OF CONTENTS

| | |
|-----------------------------|---------|
| Abstract | page 3 |
| Table of Contents | page 4 |
| Introduction | page 5 |
| Background and Significance | page 6 |
| Literature Review | page 12 |
| Procedures | page 19 |
| Results | page 20 |
| Discussion | page 27 |
| Recommendations | page 30 |
| Reference List | page 32 |

APPENDICES

| | |
|---|---------|
| Appendix A: Proposed Klamath County Immediate Damage Assessment Procedure | page 35 |
| Appendix B: Proposed Klamath County Immediate Damage Assessment Form | page 40 |
| Appendix C: Questionnaire Cover Letter | page 42 |
| Appendix D: Questionnaire | page 44 |
| Appendix E: Sample Format for a Flash Report | page 46 |
| Appendix F: Kosovo Rapid Village Assessment | page 48 |

Introduction

On September 20, 1993 at 8:28 P.M. Pacific Daylight Time (PDT), an earthquake measuring 5.9 on the Richter scale struck in the south-western portion of Klamath County, Oregon. At 10:45 P.M PDT, a second earthquake measuring 6.0 struck in the same area. These earthquakes caused two deaths and property damage listed as moderate. The most extensive property damage was to non-reinforced masonry buildings located in the City of Klamath Falls. Abby Ann Kershaw, Oregon Emergency Management – Financial and Recovery Services Section Director, stated that initially following the earthquakes, Klamath County emergency management personnel requested numerous and diverse resources without an adequate initial assessment of the extent and types of damage and the resulting specific needs (Personal Communication, 2007). The problem is that a procedure for initial rapid damage assessment does not exist in the Klamath County Emergency Operations Plan (EOP) or in the plans of any jurisdictions in Klamath County, including Klamath County Fire District No. 1. The purpose of this project is to create an initial rapid damage assessment procedure that can be utilized by any jurisdiction or discipline in Klamath County, utilizing career and/or volunteer personnel. Using action research this project will create a draft initial rapid damage assessment procedure for the Klamath County Emergency Operations Plan while answering the following questions:

1. What are the areas, facilities, and infrastructure that require initial rapid damage assessment?
2. Who requires communication of the critical information gathered during initial rapid damage assessment?
3. What models currently exist in similar rural counties in the State of Oregon and the Pacific Northwest?

4. What are the key components in a simple initial rapid damage assessment procedure that can be taught to all disciplines, whether the personnel are career or volunteer?

Background and Significance

Klamath County is located in south-central Oregon covering 6,135 square miles, making it Oregon's 4th largest county. The county is bounded by the state of California to the south, Jackson County to the west, Deschutes County to the north and by Lake County to the east.

Klamath County ranges from the Cascade Mountains on the west, to the high desert on the east, from the California Border on the south, to Walker Rim and Crescent/Odell Lakes on the north. The highest elevation is in the Cascades at 9,036 feet, and the lowest elevation is in the west side at 2,759 feet, in the Klamath River canyon.

Fifty-six percent of Klamath County is federally owned timber land with many scattered interspersed rural communities creating a significant wildland-urban interface. The current population of Klamath County is 66,192. The largest city in the county is Klamath Falls, which is the county seat. The City of Klamath Falls and Klamath County Fire District No. 1 are located in the south central portion of the county in the center of the area known as the Klamath Basin. The Klamath Basin is home to numerous federal irrigation projects providing water to this rich agricultural area. Klamath County is also the home of Crater Lake National Park.

Klamath County contains numerous residential areas, a destination resort, the headquarters of a world-wide window and door manufacturer (Jeld-Wen Inc.), their associated manufacturing plants, other wood products industry facilities, numerous retail centers, a technology university, a community college, and the only hospital that serves both the county and the region. Since the early 1990s the county has experienced a severe economic decline of the timber industry and the closure of numerous wood products facilities. The unemployment

rate in Klamath County is currently 6.5% compared to the current average state-wide of 5.4%. This is still an improvement from the peak rate of greater than 12 percent during 2004.

Flowing through the county is the major north-south railway line serving the west coast of the United States and U.S. Highway 97, a major north-south transportation corridor for the west coast of the United States. U.S. Highway 97 is the second most traveled highway in the State of Oregon for hazardous materials. Eight other state highways intersect with U.S. Highway 97 in Klamath County and one additional state highway bisects the northeast corner of the county.

A further impact to Klamath County is the re-routing of Interstate 5 commercial truck traffic to U.S. Highway 97 due to bridge replacements in Southern Oregon that begins June 1, 2007. This will result in a substantial increase of commercial truck traffic through Klamath County for the next several years, creating the potential for a higher number of vehicle accidents and hazardous materials incidents.

Klamath County is governed by three elected commissioners who are paid a salary and oversee all of the county departments; there is not a county administrator or manager. Klamath County provides a full range of services including governance, public works, community development, public health, and emergency management. The Klamath County Building Department is the building department for the entire county including all of the incorporated cities.

Law enforcement in Klamath County consists of the Klamath County Sheriff's Office (KCSO), three organized police departments that serve three of the five incorporated cities in the county, and a district office of the Oregon State Police.

Structural fire protection in Klamath County is provided by eighteen fire departments; fifteen of which are organized as rural fire protection districts under State of Oregon statutes. Two of the remaining fire departments are federal and/or state assets, Kingsley Field Fire Department and Crater Lake National Park. The third is a volunteer fire department that has not organized as a rural fire protection district; they protect a small isolated un-incorporated community. All of the fire departments provide Emergency Medical Services (EMS) first response and wildland fire initial attack response. Due to the significant amount of federally owned land in the county and additional state and privately owned timber lands in Klamath County, there are also federal and state wildland fire response agencies located throughout Klamath County. These agencies are the U.S. Forest Service (USFS), Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), Oregon Department of Forestry (ODF) and Walker Range Forest Protection Association. There are mutual aid agreements between all of the local, state, and federal agencies.

Klamath County is divided into thirteen ambulance service areas, the providers for seven of these areas are fire protection districts. Five of the remaining areas are served by separate non-profit ambulance services and the last area is Crater Lake National Park, which has its own ambulance service. There are mutual aid agreements between all of the ambulance services.

All of the structural fire departments and ambulance services in Klamath County are volunteer agencies, except for Klamath County Fire District No. 1, Kingsley Field Fire Department, and Crater Lake National Park Fire Department. Some of the volunteer agencies do employ an administrator and/or a small amount of staff.

Klamath County Fire District No. 1 serves an area of the 250 square miles surround and including the City of Klamath Falls. While this represents approximately only four percent of

the land in Klamath County, Klamath County Fire District No. 1 serves approximately 80 percent of the population. The author is employed as the Fire Chief of Klamath County Fire District No. 1. Klamath County Fire District No. 1 exists today from the consolidation of the City of Klamath Falls Fire Department into Klamath County Fire District No. 1 in April 1992. This was done to improve fire protection in both the city and district, while reducing the city's financial challenges. The consolidation was done first as an intergovernmental agreement and then permanently approved by the voters in November 1994.

While Klamath County Fire District No. 1 functioned under the intergovernmental agreement, two earthquakes with intensity of magnitude 5.9 and 6.0 struck the Klamath Basin on September 20, 1993. As cited previously, these earthquakes struck at 8:28 P.M. Pacific Daylight Time (PDT) and 10:45 P.M. PDT. These two earthquakes caused two deaths; one from a large boulder rolling onto an occupied vehicle and the other from a heart attack attributed to the stress of the event. These earthquakes caused more than \$10 million in damage and economic losses and severely damaged several older masonry buildings in downtown Klamath Falls, including the Klamath County Courthouse. Abby Ann Kershaw, Oregon Emergency Management – Financial and Recovery Services Section Director, stated that initially following the earthquakes, Klamath County emergency management personnel requested numerous and diverse resources without an adequate initial assessment of the extent and types of damage and the resulting specific needs (Personal Communication, 2007). She further reports that the initial response and county emergency management response activities were disjointed.

A review of the Klamath County Emergency Operations Plan (1998, p. A2 - 13) reveals that damage assessment is assigned to the Klamath County Assessor and the American Red Cross. Further Annex L describes the damage assessment procedure in detail. Appendix 1 of

Annex L is the damage assessment report form but it states “To be completed at a later date”.

Since these procedures did not exist in 1993, it added to the confusion and problems in ordering and obtaining critical resources through the State of Oregon Officer of Emergency Management.

A recent nationwide study showed Oregon ranks third in the United States in the potential for damage and losses caused by earthquakes (Earthquake and Landslide Program, 2000).

During the forty-eight hours following the September 20, 1993 earthquakes, two earthquakes with intensity of 4.1 to 4.3 occurred in the Klamath Falls area (Seismo-Watch, 2002). Since that time there have been seven earthquakes with intensity of 4.0 or greater in Klamath County, including the most recent on May 15, 2002 with intensity of 4.3 (Seismo-Watch, 2002).

Another related natural hazard is volcanic eruption. Crater Lake was created by an enormous eruption approximately 7,700 years ago; this massive eruption created 150 times as much ash as the Mount Saint Helens eruption of May 18, 1980 (National Park Service, 2002). In addition Klamath County is at risk for floods, major winter storms, intense thunderstorms, catastrophic wildfire, significant transportation incidents and hazardous material releases (Personal Communication, 2007). Further, according to local law enforcement, although a rural county, Klamath County is at slight risk for civil unrest or terrorism events (Personal Communication, 2007).

Klamath County does not have an established Emergency Operations Center (EOC), but rather will convert rooms or areas in the Klamath County Government Center or Jail into an EOC during an event. This presents a challenge to creating a procedure for immediate damage assessment that will be utilized prior to an EOC being established during a significant event.

During 2006, the author attended the National Fire Academy Executive Fire Officer Program course, Executive Analysis of Fire Service Operations in Emergency Management. The

course lectures and simulations reinforced the need and criticality of initial rapid damage assessment. Upon returning to Klamath County Fire District No. 1, the author met with Bill Thompson, Klamath County Emergency Management Director, and George Buckingham, Assistant Emergency Management Director, to review the course content and discuss ideas for the Applied Research Project (Personal Communication, 2006 and 2007). Director Thompson stated the most critical need was to update the damage assessment procedure, specifically addressing immediate damage assessment, in the Klamath County Emergency Operations Plan. The author agreed to utilize the Applied Research Project to create a draft revised procedure.

Creation of a procedure for initial rapid damage assessment relates directly to the Executive Analysis of Fire Service Operations in Emergency Management course goal of “prepare senior fire officers in the administrative functions necessary to manage the operational component of a fire department effectively” (Department of Homeland Security (DHS), 2005). Further this project addresses the United States Fire Administration (USFA) Operational Objectives numbers four (#4) and five (#5) which are, “To promote within communities a comprehensive, multi-hazard risk reduction plan led by the fire service organization” and “To respond appropriately in a timely manner to emerging issues” (DHS, 2003).

The mission of Klamath County Fire District No. 1 is to prevent or reduce the potential for fire ignition, injury or sudden illness, or life threatening situations, and to minimize or control the loss or severity once an incident occurs (KCFD 1, 2003). This Applied Research Project relates directly to this mission since many of the situations requiring immediate damage assessment will be life threatening and properly implemented immediate damage assessment procedures will help to control the loss and severity.

Literature Review

The Klamath County Emergency Operations Plan (1998) page A2 – 13 addresses damage assessment and assigns responsibility for it to the Klamath County Assessor and the American Red Cross. It states the following seven specific assignments.

- a. Establish a damage assessment team from among county departments with assessment capabilities and responsibilities.
- b. Train and provide damage-plotting team for the EOC.
- c. Develop systems for reporting and compiling information on deaths, injuries, and dollar damage to tax-supported and private property.
- d. Assist in determining geographic extent of damage area.
- e. Compile estimates of damage for use by County or City officials in requesting assistance.
- f. Evaluate effect of damage on City or County economic index, tax base, bond ratings, insurance ratings, etc., for use in long-range recovery planning.
- g. Prepare and maintain the Damage Assessment Emergency Support Function Annex to this plan and supporting SOP's."

The Damage Assessment Emergency Support Function Annex is Annex L in the Klamath County Emergency Operations Plan. This annex in the organization and assignment of responsibilities section states "the team composition should include those possessing the necessary expertise such as: Assessor or Finance Director, Planning Department Director,

Director of Public Works, Utilities Management and School District Superintendents” (1998, p. L-3).

During communication in 2007 with Assistant Emergency Management Director George Buckingham the author learned that the Klamath County Emergency Operations Plan is currently being revised, primarily to make it National Incident Management System (NIMS) compliant.

In a 2005 Applied Research Project regarding rapid damage assessment for another rural area of Oregon, Crawford states:

Rapid damage assessment is a critical tool required by the EOC to determine the kinds of problems existing as a result of the triggering event (a disaster or other major emergency), the extent to which the triggering event has caused other events to occur (cascade effect), and the scope of each problem that has been identified.” A successful rapid damage assessment program allows the governing body to respond quickly and appropriately to the disaster, identifying the community’s needs and prioritizing for an effective response as critical resources become available. In order to be effective, the rapid damage assessment activities must be implemented at the local level.

Planitz (1999) in *A Guide to Successful Damage and Needs Assessment* states “The clear and concise assessment of damages, losses and injuries in the aftermath of a disaster is a prerequisite for the effective planning and implementation of relief and recovery.” Immediate damage assessment must be clear and concise since it will occur very soon after an event, which is the most chaotic and demanding time period in a disaster situation.

Planitz also states that one of the principals of damage assessment is that assistance must be based on priority humanitarian needs, which have to be determined prior to the disaster.

(1999, p. 2)

Planitz describes that initial assessment is broad in scope and focuses on overall patterns and trends, aims at determining immediate response and relief requirements, and is conducted immediately in the early and critical stage of a disaster, as soon as the conditions allow survey teams to operate usually about two to three days after the event (1999, p. 2). Immediate damage assessment needs to be done at the local level much sooner, usually within one to three hours of the triggering event.

Further Planitz stated that initial damage assessment “identifies the magnitude of a disaster (without necessarily delivering exact figures), the impact of a disaster on society, people’s capacity to cope, the most urgent relief needs and potential methods for delivery, priorities for action, the utilization of resources for immediate response, the need for detailed assessment of specific geographical areas or substantive sectors, the level of continuing or emerging threats, and the need for international assistance (1999, p. 3).”

Planitz describes that both the initial and detail assessment contain a situation and needs assessment, or what has happened and what needs to be done. Situation assessment depicts a picture of the situation by describing the magnitude of the disaster and the impact on population and infrastructure. A needs assessment defines the level and type assistance required for the affected population. (1999, p. 3)

The keys to a successful assessment as described by Planitz are information has to be timely, accurate, and continuously updated; emergency versus chronic needs have to be distinguished; survey methods, terminology, ratings, classifications, and information have to be

utilized and presented in a standard manner that the respective disciplines can utilize; assessment results have to be presented in a way that makes priorities and needed actions very clear; and resources to carry out the assessments must be immediately available (1999, p. 4).

The five basic elements of an assessment process are planning and preparation, survey and data collection, interpretation and forecasting, reporting, and monitoring (Planitz, 1999, p. 5 - 6). The most commonly used data collection methods are initial self-assessment, visual inspection, sample surveying, sentinel surveillance, detailed critical sector assessments by specialists, and interviews with key informants (Planitz, 1999, p. 6 - 7). Based on Planitz's descriptions the best methods to utilize in immediate damage assessment are initial self-assessment and interviews (reports) from key informants; both of which would involve personnel at critical infrastructure such as hospitals, health care facilities, assembly occupancies, public safety facilities, and utilities.

Planitz's description of assessment teams would reinforce the need for individuals and teams performing immediate damage assessment to have training prior to the event that includes understanding information beyond their specific discipline, what damage and conditions to expect following a specific disaster event type, the process to be utilized, the immediate damage assessment procedure, the forms to be utilized, and the communication means for the assessment results. (1999, p. 7 - 9) Planitz reinforces the need for having a standard reporting form for immediate damage assessment (1999, p. 9). She further states the forms should be prepared for rural villages/settlements, public works, health, education, agriculture, fisheries, and forestry; all of these are present in Klamath County, Oregon.

Planitz suggests that immediate assessment forms should contain disaster identification, location and/or facility details, communication details, access details, human & operational

details, structural damages, production damages, equipment damages, water supply damages, power supply damages, remaining threats, source of information, reporting officer details (1999, p. 10).

The Asian Disaster Preparedness Center in its second draft of Post Disaster Damage Assessment and Needs Analysis suggests that immediate damage assessment should include two different reports, “Flash and Initial” (2000, p. 3). A flash report, also called an SOS report, is submitted very quickly; it confirms a disaster has occurred, what response steps are being taken, and what external relief or additional resources might be needed. This document suggests that an initial report should follow the flash report as soon as possible, within hours. It states the initial report should briefly summarize: the severity of the disaster, actions being taken, local response capacities, the immediate priorities for external resources, where resources are needed, what type are needed, and in what quantity, possibly suggesting the best way to deliver the resources, and forecasted future needs due to cascade effects (p. 3).

This document suggests that report formats should be standardized since they will be received from many sources (p. 4). These formats should also be as simple as possible and in checklist format, guiding the person using it through identifying the problem, the current status of response, any unmet needs, and decision making. Further it suggests that the reports be in separate parts and a person assigned for each part (p. 4-5). The suggested parts are: “search and rescue, evacuation, protection, medical and health, shelter and clothing, food (including cooking utensils and cooking fuel), water, sanitation, and lifeline systems (communications, power supplies, transport, etc.)”. Also the critical point is made that for flash and initial assessments, the speed of reporting is more important than precise figures (p. 5).

In the terminology section of second draft of Post Disaster Damage Assessment and Needs Analysis it is stressed that imprecise terminology or different understanding of terminology can cause confusion; this is especially true in the areas of victims and damage to structures (p. 6). “Victims should be described in terms of needs, e.g. those in need of evacuation, shelter, water, etc.” (p. 6).

It suggests for damage to structures utilizing a percentage of damage based upon usability of the structure with break points at less than 25% damage, greater than 25% damage, greater than 50% damage, greater than 75% damage and 100% damage. It describes less than 25% damage as minor structural damage and usable. Greater than 25% damage is described as some structural damage but safe for limited use and repairable within one week. Greater than 50% damage is described as significant structural damage that is unsafe for use and repairs will take more than a week. Greater than 75% damage is described as major structural damage that is unsafe for use and repairable within a month. 100% damage is described as structure is unusable and cannot be repaired (p. 6).

The State of Nevada Division of Emergency Management Disaster Response and Recovery Guide for Local Government in Appendix 4 states that rapid assessment is conducted by local government conducts a rapid assessment to "size up" the situation and to determine the extent of damage to people, property and the infrastructure; it is normally done within the first 24 hours of an emergency/disaster (n.d, p. 103).

Oregon Emergency Management publishes the Disaster Recovery Assistance Guidebook or DRAG (2004); in it there is an initial damage assessment checklist that was updated in 2005. It states “the Initial Damage Assessment (IDA) is meant to be just that, an initial assessment of the damage and impacts caused by the disaster. Don't "overdo" the IDA” (Oregon, 2004, p.

Initial Damage Assessment Checklist [IDAC] -1). It stresses that time should not be spent on work that will be repeated later and that the IDA is only trying to identify that damage and impacts to the community to bring in the proper resources (p. IDAC -1). The DRAG also states that there will be variation between the initial assessment and the actual number of applications if disaster assistance programs are offered later; these programs would actually be identified by the preliminary damage assessment supervised by state and federal officials (p. IDAC-1). The preliminary damage assessment usually takes place 24 – 72 hours after the event. (p. I-2 & I-3)

The overview section of the DRAG discusses the assessments done by the American Red Cross; including a preliminary damage assessment that is usually a “windshield survey” performed in the first twenty-four hours following an event (Oregon, 2004, p. I-2 & I-3). and detailed damage assessment. The DRAG also discusses the post-disaster safety inspections of buildings that are required by Oregon Statue to be done only by certified building officials, utilizing the Applied Technology Council (ATC) procedures and the ATC-20 forms (p. I-3 & I-4). The ATC-20 program is specific to post-earthquake safety evaluation of buildings (ATC, 2005)

The Kosovo Rapid Village Assessment is another form found during the literature review; it includes diagrams of differing levels of damage to buildings; a copy of this document is in Appendix F (UNHCR, 1999). Boca Raton Fire Rescue Services in Boca Raton, Florida also utilizes a rapid damage assessment procedure that includes pictures depicting the four different levels of structural damage (Scott, 2006). The snapshot survey form used as part of Boca Raton Fire Rescue Services’ rapid damage assessment procedure is a short form that depicts the level of damage to a fire station and its immediate surrounding area (Appendix R).

Procedures

Definition of Terms

Cascade Effects. “The secondary damage that is produced as a result of the disaster or major emergency.” (Crawford, 2005, p. 38)

Damage Assessment. The gathering of information related to the impact of an event, or series of events, on life and property within a defined area. There are two types of damage assessments: immediate and post-incident (DHS, 2005).

Emergency Operations Center (EOC). The site or sites from which government officials and others manage response to major emergencies or disasters, including the coordination of off-scene support to on-scene operations (Oregon, 2001, p. 19)

Immediate Damage Assessment. A rapid estimate of damage at a specific incident site or within an incident area. The immediate damage assessment is made on arrival at the incident site or area (DHS, 2005).

Post-incident Damage Assessment. A detailed examination and analysis of the total damage at a specific incident site or within an incident area. The post-incident damage assessment is conducted after the active phase of the incident has been concluded (DHS, 2005).

Research Methodology

This research was conducted following the 2003 Applied Research Project Guidelines (DHS, 2003) and the fifth edition of the Publication Manual of the American Psychological Association (APA) (2001).

This research project utilized action research to Klamath County Fire District No. 1. As the research of documents and history was conducted, the author realized that it was important to learn the current knowledge level and participation interest of the agencies and disciplines that

would be involved in immediate damage assessment. A questionnaire instrument to clarify these opinions was created and thirty-three questionnaires were distributed to thirty-one different agencies. Thirteen completed questionnaires were returned of the thirty-three total questionnaires distributed or 39.4 percent. The questionnaire results do not appear to be valid since this number returned is not a significant portion of the department. A copy of the questionnaire is included as Appendix D.

This questionnaire was limited since it only included the opinions of public safety agencies, utility providers, essential facilities, and other governmental agencies. There could be some essential facilities or other entities not polled who would have a role in assessing damage after an event.

A literature review was done of the local emergency operations plan, state emergency operations plans, articles in related trade journals, and other Applied Research Projects to identify the key components of an Immediate Damage Assessment Procedure. The literature review reinforced the importance of involving more than just public safety in the procedure, thus the questionnaire was sent to utilities, school districts, and the single hospital in the county.

Results

Research Question 1

What are the areas, facilities, and infrastructure that require initial rapid damage assessment?

The literature review reinforced that immediate damage assessment needs to be performed on all critical and essential facilities. In Klamath County these facilities would include the building to be used as the EOC, government centers, jail, hospital, sheriff's office, police stations, fire stations, ambulance stations, major roads, the associated bridges on major

roads, railroad bridges, utility facilities, and schools. In addition a general impression of damage to residential and commercial structures, agricultural crops, timber reserves and the amount of debris in streets and roads is helpful, especially in assessing economic impact (Oregon, 2004, p. I-4).

Research Question 2

Who requires communication of the critical information gathered during initial rapid damage assessment?

The critical information is needed first by emergency responders so that an effective response can be made and needed resources requested. If the event or incident is not county-wide, this would also allow movement of resources to areas needing them most. The county emergency manager also requires the information so that he can determine what portions of the county EOP need to be implemented. Except for the smallest incidents, the State of Oregon Officer of Emergency Management also requires a synopsis of the information gathered by the assessment. This is a requirement even if the county doesn't request resources from the state.

If a local jurisdiction or Klamath County are going to "declare an emergency", then the elected government officials will require a synopsis of the information. Further any incident or emergency exceeding local and/or county resources will require assistance and resources coordinated through the Oregon Office of Emergency Management. This requires providing their office with the results of the immediate damage assessment.

In a major disaster, the information from the immediate damage assessment may even be forwarded to the Federal Government, so that a presidential declaration of disaster can be considered or issued (Oregon, 2004, p. I-11)

Research Question 3

What models currently exist in similar rural counties in the State of Oregon and the Pacific Northwest?

There were contacts made to several similar counties, unfortunately only one response was received. This model for a similar county or rural area was obtained from Mist-Birkenfeld Rural Fire Protection District (Crawford, 2005). This district is very similar to most of Klamath County, i.e. all of the county that does not surround Klamath Falls. While an exact procedure was not part of Crawford's work, a detailed lesson plan regarding immediate damage assessment was included (Appendix B). This document will be useful in developing the training plan for Klamath County.

Research Question 4

What are the key components in a simple initial rapid damage assessment procedure that can be taught to all disciplines, whether the personnel are career or volunteer?

The first key component identified was assuring your personal safety and wellbeing and of those present with you. If you are at home this would include your family and any other persons in the structure. If you are at work this would include your co-workers and any members of the public present. The next key component is assessing the integrity of the structure you are in, whether at home or a work site. In many cases this will assess the damage to essential facilities – hospital, jail, police station, fire station, ambulance station, water plant, sewer plant, electrical sub-station, telephone switching station, etc., since many of these facilities have twenty-four personnel.

Next all disciplines must be assigned an area of the county. A drive through of the assigned area will reveal extent of damage to buildings, roads, utilities, etc. There must be a systematic plan for this, i.e. assigned boundaries and route.

Then there must be a plan for collecting and disseminating the information from and to all the different agencies requiring the information.

Questionnaire

Of the thirty-three questionnaires sent out to agencies in Klamath County, thirteen completed questionnaires were returned or 39.4% of the total. The thirteen questionnaires returned represented eight fire agencies, four of which are also ambulance service providers, one ambulance service, one law enforcement agency, two responses from Klamath County Emergency Services (Emergency Management), and the district office of the Oregon Department of Transportation. It is noteworthy that of the eight fire agencies, five are fire protection districts, one is a volunteer fire department without taxpayer support, one is a federal and state agency (Air National Guard Base), and one is a federal agency (National Park).

The first question requested: Does your agency provide an essential public service? All thirteen respondents or 100% said their agency did provide an essential public service.

The second question asked: Does your agency have a copy of the Klamath County Emergency Operations Plan? Nine of the respondents or 69.2% stated their agency has a copy of the Emergency Operations Plan. The tenth respondent did not check a choice but did write “probably a very old one”. The remaining three respondents stated they did not have a copy of the Emergency Operations Plan. Two of these agencies are small volunteer fire departments and one is a volunteer ambulance service with a paid manager/lead paramedic.

The third question asked: Does your agency have an immediate rapid damage assessment procedure in place for use in a disaster situation? Nine of the respondents or 69.2% stated their agency does not have a procedure for immediate rapid damage assessment. The remaining four respondents stated they did have a procedure for immediate rapid damage assessment; however none of these respondents provided a copy of their procedure. The respondents with a procedure were Oregon Department of Transportation, Crater Lake National Park, Kingsley Air National Guard Base Fire Department and the Klamath County Assistant Emergency Manager. It is noteworthy that both the Klamath County Emergency Manager and the Assistant Emergency Manager responded to this questionnaire but had different responses to this question. The Emergency Manager stated their agency does not have a procedure but the Assistant Emergency Manager stated their agency did have a procedure and noted “EOP, Book 1, Annex L”. As noted previously, Appendix 1 in Annex L states the damage assessment form will be created later.

Ken Hay, the Structure Fire Management Officer for Crater Lake National Park stated “I’ve been trying to get a copy from our all-risk teams – unable to find on line. I know something exists because we use it during hurricanes at Parks in the Pacific (sic Atlantic) and along the Gulf”

The fourth question asked: If your agency has an immediate rapid damage assessment procedure, how is the assessment conducted? (Bushnell, 2002) Only two of the respondents who said they had a procedure circled any items. Oregon Department of Transportation conducts vehicle drive through of area, walk through of area, and an aerial overview utilizing aircraft. Kingsley Air National Guard Base Fire Department conducts a vehicle drive through of area. One of the nine agencies that stated in question three that they do not have a procedure wrote in this question four “I’m not aware of any established procedure”.

The fifth question asked: Are priority locations and/or target hazards established for the immediate damage assessment procedure in your agency and/or area? (Bushnell, 2002) Eight of the thirteen or 61.5 % of the respondents checked the “no” response. Three of the thirteen respondents checked the “yes” response. Two of the thirteen respondents did not check yes or no but did provide comments or locations to the second portion of the question.

The second portion of question five stated: “If yes please list the top 5 priority locations and/or target hazards”. As stated previously two respondents did not select the “yes” or “no” response but did provide comments. One of these respondents stated six locations or target hazards in the following order, “1. Bridges (road and railroad) 2. Domestic water facilities 3. Treatment Plants 4. Building Stability 5. Communications 6. Chiloquin Airport”. The other respondent stated “I’m sure this has been done, but I’ve not seen the document”. The Klamath County Emergency Manager was one of the three respondents who selected the “yes” response, he stated “Hospitals, Schools, Public Safety facilities, Seats of government, major infrastructure facilities”. Oregon Department of Transportation stated “Bridges and any state hwy (highway)”. Kinsley Fire Department stated “Available outside of this document. “For Official Use Only” information.”

The sixth question asked: Please indicate whether the following disaster situations could negatively impact your service? The responses were:

| | | |
|---------------------|-------------------------|-----------------|
| Earthquake | Yes <u>12</u> | No <u>1</u> |
| Flood | Yes <u>13</u> | No <u>0</u> |
| Volcanic Eruption | Yes <u>12 & 1-?</u> | No <u>1 - ?</u> |
| Major Weather Event | Yes <u>13</u> | No <u>0</u> |
| Terrorist Attack | Yes <u>12</u> | No <u>1</u> |

| | | |
|----------------------|---------------|-------------|
| Fire-Conflagration | Yes <u>12</u> | No <u>1</u> |
| Other: (please list) | Yes <u>7</u> | No <u>0</u> |

The responses to other included six that did not choose the yes or no response and did not make any comments. The seven yes responses stated the following situations: “Major Hazmat Incident”; “Passenger Vessel Accident (our 3 boats hold 50 passengers plus 2 crew each)”; “Haz-Mat, Major Power Failure, (Currently Dam Failure?), Drought”; “Health related outbreaks”; “Haz-Mat’s on Highways”; “Any incident that will impact state highway traffic”; and one blank response.

The seventh question asked: Please list any essential facilities utilized by your agency. (Use separate sheet if needed) Five respondents or 38.5% did not have a response to this question. The remaining eight respondents or 61.5% stated: “Fire Stations, Hospital, Roads/Bridges”; “Where ever we can beg, borrow, or steal for an EOC!”; “Secondary EOCs, KCSO bldg. (Klamath County Sheriffs Office building), 9-1-1 for information”; “Two Fire Stations (Soon To Be Three), Office and Training Facility, Community Hall”; “Ranger Station at Headquarters (houses Communications Center and Base Station), Structure Fire Station at Headquarters, Two Repeater Stations on Watchman and Mt. Scott Peaks, Water Treatment Plant and pumping station at Annie Creek Springs (near Mazama Village), Steel Information Center/Sager Administration (house artifacts, etc.)”; “Gilchrist School”; and “Available outside of this document. “For Official Use Only” information.”

The eighth question asked: Does your agency have any facilities utilized as shelters in the Klamath County Emergency Operations Plan? There were two or 15.4% “yes” responses, six or 46.2% “no” responses, and five or 38.5% “don’t know” responses. One of the “yes” respondents also commented “I think so”. Two of the six “no” respondents commented: “At least I’m not

aware of any” and “Our agency does not provide shelter resources”. One of the five “don’t know” respondents also commented “The books I have do not have any evac lists”.

The ninth question asked: Would your agency participate in training regarding the developed Immediate Rapid Damage Assessment Procedure? There were ten or 76.9% “yes” responses, one “no” response, and two “don’t know” responses. None of the respondents included any comments for this question.

The final statement of the questionnaire was an opportunity for the respondent to request receipt of the questionnaire results and/or the Applied Research Project. Seven respondents or 53.8% requested a copy of the questionnaire results and five respondents or 38.5 % requested a copy of the Applied Research Project. Three respondents or 23.1% choose neither option. There were not comments from respondents to this statement.

Discussion

The first item learned in this research project was that contrary to what was written in the Applied Research Project Proposal, the proper term for this type of assessment is immediate damage assessment. This is instead of rapid or initial as stated in the proposal.

As previously cited, an immediate damage assessment procedure will give an overview of the effects caused by a disaster or event and the immediate needs. It is critical that the procedure include both essential facilities and multiple disciplines. The procedure needs to include more than just structural damage and injuries; status of lifelines, i.e. electricity, natural gas, water, sewer, telephone, and transportation infrastructure must be included in the procedure.

During the research for this project a personal interview was conducted with Sharla Staal-Bishop, District Manager for the Klamath-Lake District of the Southern Oregon Chapter of the American Red Cross. Specifically the current Damage Assessment page and annex from the

Klamath County Emergency Operations Plan was reviewed and discussed. Manager Staal-Bishop stated that certain items cited on page A2 – 13 could not be provided by the local district of the American Red Cross. Specifically she stated that since they are a volunteer organization, an initial damage assessment team would take approximately twelve hours to assemble, longer if the effects were widespread in the community (Personal Communication, February 28, 2007).

Following the interview, Manager Staal-Bishop communicated by e-mail with Klamath County Emergency Manager Bill Thompson requesting information regarding the American Red Cross response to the September 20, 1993 earthquakes, and forwarded the correspondence to me (Personal Communication, March 14, 2007). Manager Thompson was the manager for the local American Red Cross District during the September 20, 1993 earthquakes. Manager Thompson reported that a rapid damage assessment of residential structures was done by American Red Cross volunteers; however they were overwhelmed due to a lack of enough volunteers. Manager Thompson reported further that the American Red Cross assisted Oregon Emergency Management and Federal Emergency Management Agency personnel with initial and post disaster assessments; both of these assessments happened three to ten days after the earthquakes. These results reinforce that the American Red Cross is not the primary agency to conduct the immediate damage assessment following an event. This is why the immediate damage assessment procedure in Appendix A utilizes personnel at essential facilities or agencies providing essential services.

As cited previously the State of Oregon requires Building Officials to have a damage assessment plan utilizing ATC-20 procedures. These procedures are only for structural integrity and stability and do not include roads, bridges, or utilities. The ATC documents do not suffice for immediate damage assessment, since they are primarily structural damage focused and

require trained personnel with structural code or engineering expertise. Therefore these procedures are not appropriate for immediate damage assessment but are appropriate as part of a post incident damage assessment procedure for Klamath County. Further the structural damage assessment procedures of the Klamath County Building Official need to ensure that shelters and essential facilities are the first structures assessed following an event.

The questionnaire results do not appear to be valid since the number returned, thirteen or 39.4 percent, is not a high enough number to ensure a 95 percent confidence level (DHS p.39, 2003). The diversity of the services provided by the agencies that returned questionnaires is important. While the number of questionnaires returned was low, the information provided by agencies of disciplines different than the author's agency helps to make the responses more multi-discipline and applicable for both career and volunteer personnel.

Since one response stated that an earthquake would not negatively impact their service, it would appear that an education component regarding the known hazards and history of events will be needed in the training plan for the immediate damage assessment procedure.

A review of Crawford's (2005) Applied Research Project revealed a well written training outline for rapid damage assessment; however, it did not include a direct procedure to be utilized following an event. The Boca Raton Fire Rescue Services' rapid damage assessment procedure is helpful since it had pictures for different levels of damage (Scott, 2006). The disadvantage of this procedure was it being designed for a large metropolitan area. The Kosovo assessment is helpful since it also contains pictures that are examples of damage level, however it goes into too great a detail related to the civil unrest they were experiencing in that region (UNHCR, 1999).

Planitz (1999, p. 2) states that country self response capacity needs to be preferred over outside assistance and that the same principle applies to the local situation, "community response

capacities have to be preferred over government assistance.” This would appear to be in conflict with what was observed after Hurricane Katrina – local communities immediately depended on the Federal government for assistance – citizens are not following the guidance to be self-sufficient for seventy-two hours and keep your own critical supplies, e.g. medications.

As previously cited the Asian Disaster Preparedness Center in its second draft of Post Disaster Damage Assessment and Needs Analysis – Reporting (2000, p. 3) suggests that immediate damage assessment should include two different reports, “Flash and Initial”. The draft document provides a sample flash report in their Annex A (p. 8) which is reproduced in Appendix E of this project. The draft document also provides a sample initial report in Annex B (p. 9 – 14). A six page report is too long and complicated for use as an immediate damage assessment form; however, this form may be useful to an EOC to compile the incoming immediate damage reports.

Recommendations

The first recommendation is that both the author and Klamath County Emergency Management need to pursue participation in review of the draft procedure and associated training with agencies beyond those that responded to the questionnaire. This is because the agencies that did not respond to the questionnaire will still need to participate in immediate damage assessment during an event to improve the timeliness and accuracy of the assessments.

Further a training plan for the immediate damage assessment procedure will have to be developed. Some of the documents cited in this Applied Research Project can be used to augment the design of the training plan.

Lastly, while this immediate damage assessment procedure will be very valuable following a major event, Klamath County must address the critical need for an established EOC.

If the immediate damage assessment report forms are sent to Klamath County 911, their limited resources will be overwhelmed.

Reference List

- American Psychological Association. (2001). *Publication Manual of the American Psychological Association (5th ed.)*. Washington, DC: American Psychological Association
- American Technology Council (ATC). (2005). *Applied Technology Council Announces Availability of the ATC-20-1 Field Manual: Post-Earthquake Safety Evaluation of Buildings (2nd Ed.)*. Retrieved February 4, 2007 from <http://www.atcouncil.or/rel121205.shtml>
- Asian Disaster Preparedness Center (2000). *Post-Disaster Damage Assessment and Needs Analysis*. Retrieved February 3, 2007 from <http://203.159.16.18/adpc/IKM/ONLINE%20DOCUMENTS/downloads/Dana-post-dis.pdf>
- Bushnell, C. C. (2002). *Creating the Framework for an Immediate Damage Assessment Capability for the Guilford Fire Department Following Natural or Man-Made Disasters*. Emmitsburg, MD: National Fire Academy
- Crawford, D. F. (2005). *Developing Rapid Damage Assessment Plans and Procedures for Initial Response to Major Incidents in a Rural Setting*. Emmitsburg, MD: National Fire Academy
- Department of Homeland Security (DHS), United States Fire Administration (USFA), National Fire Academy (NFA). (2005). *Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM) – Student Manual (2nd Ed.)*. Emmitsburg, MD: Author.

Department of Homeland Security (DHS), United States Fire Administration (USFA), National Fire Academy (NFA). (2003). *Executive Fire Officer Program, Operational Policies and Procedures, Applied Research Guidelines*. Emmitsburg, MD: Author.

Department of Homeland Security (DHS), United States Fire Administration (USFA), National Fire Academy (NFA). (2003). *EFOP Applied Research Self-Study Course, Student Study Guide*. Emmitsburg, MD: Author.

Federal Emergency Management Agency. (2004) *Leading Community Risk Reduction (LCRR) Student Manual*. Emmitsburg, MD: Author

Humanitarian Information Centres and Partners (1999). *Kosovo Rapid Village Assessment*.

Retrieved February 3, 2007 from

http://www.humanitarianinfo.org/IMToolBox/05_Assessments/Assessment%20Forms/Rapid_Assessment/2001_KosovoRapidVillageAssessment.pdf

Klamath County Emergency Management Advisory Committee (EMAC). (1998) *Klamath County Emergency Operations Plan*. Klamath Falls, OR: Klamath County

National Park Service, United States Department of the Interior. (2002) Crater Lake (GPO:2004-304-337/00057) [Brochure]. Washington, DC: U.S. Government Printing Office.

Nature of Northwest Information Center (2000). *The Earthquake and Landslide Program*.

Retrieved March 18, 2007 from

<http://www.oregongeology.com/sub/earthquakes/EQprogram.pdf>

Nevada Division of Emergency Management (n.d.). *Disaster Response and Recovery Guide for Local Government*. Retrieved April 29, 2007 from

http://dem.state.nv.us/documents/rr_guide.pdf

Oregon Office of Emergency Management (2001). *State of Oregon Emergency Management Plan: Volume II*. Retrieved February 24, 2007 from

http://www.oregon.gov/OOHS/OEM/docs/library/or_emp_volum_2_emerg_oper.pdf

Oregon Office of Emergency Management (2004). *Disaster Recovery Assistance Guidebook*. Retrieved February 24, 2007 from

http://www.oregon.gov/OOHS/OEM/fin_rec/disaster_recover_guide.shtml

Planitz, A. (1999). *A Guide to Successful Damage and Needs Assessment*. South Pacific Disaster Reduction Programme. Retrieved February 3, 2007 from

http://www.proventionconsortium.org/themes/default/pdfs/guide_damage.pdf

Scott, D. L. (2006). *Creating and Implementing a Rapid Damage Assessment Program for Boca Raton Fire Rescue Services*. Emmitsburg, MD: National Fire Academy

Seismo-Watch Inc. (2002). *List of M 4.0+ quakes near Klamath Falls since 1990*. Retrieved March 18, 2007 from <http://www.seismo->

[watch.com/EQS/AB/2002/020515.OR/020515.OR.list.html](http://www.seismo-watch.com/EQS/AB/2002/020515.OR/020515.OR.list.html)

Seismo-Watch Inc. (2002). *Special Earthquake Report: Klamath Falls M 4.3 Earthquake*.

Retrieved March 18, 2007 from <http://www.seismo->

[watch.com/EQS/AB/2002/020515.OR/020515.OR.html](http://www.seismo-watch.com/EQS/AB/2002/020515.OR/020515.OR.html)

Appendix A

Proposed Klamath County

Immediate Damage Assessment Procedure

IMMEDIATE DAMAGE ASSESSEMENT

Purpose

The purpose of this Immediate Damage Assessment Procedure is to determine the extent of damage following a disaster or major event. It also displays or determines the major hazards and immediate needs, e.g. amount of deaths, injuries, and entrapments; extent of damage to critical infrastructure – transportation, utilities, and communication, amount of debris inhibiting transportation or rescue; status of essential facilities, and amount of damage to structures, both residential and commercial.

Without a procedure and structured process an incomplete picture of the situation would be produced. This could result in areas not being assessed and/or populations left in need or at risk.

Background

Klamath County is an earthquake fault zone with a long history of earthquakes in the intensity range of 4.0 to 6.0. The last significant earthquake occurred on September 20, 1993; it was actually two earthquakes occurring within 2.5 hours, the initial measuring 5.9 and the second 6.0. These earthquakes caused two deaths and moderate damage in the Klamath Falls area. A nationwide study published in 2000 by the Earthquake and Landslide Program showed Oregon ranks third in the United States in the potential for damage and losses caused by earthquakes.

Another related earth hazard is volcanic eruption. Crater Lake was created by an enormous eruption approximately 7,700 years ago. This massive eruption created 150 times as much ash as the Mount Saint Helens eruption of May 18, 1980.

In addition Klamath County is at risk for floods, major winter storms, intense thunderstorms, catastrophic wildfire, significant transportation incidents and hazardous material releases.

Procedure

Klamath County has been divided into sectors based upon fire district and ambulance service area boundaries. The reason for selecting these boundaries is that it addresses the entire county and all of the population centers.

Following an event the first priority is to assure your personal safety and then the safety of any persons with you. This is done whether you are affiliated with a public safety entity, an essential facility, a critical infrastructure entity, a government agency, or volunteer with a disaster agency. Any injuries will be recorded on the rapid damage assessment report.

The second priority is to assess the damage to the structure you occupy. If you are on-duty in an essential facility you will record the results on the rapid damage assessment report. If you are not in an essential facility, but the structure is significantly damaged and appears unsafe to occupy, you will assist the occupants in evacuation to a safe area.

The third priority is to assess and report the damage in your assigned area. This is done by driving through the area conducting a “windshield survey”. The purpose of the windshield survey is not to provide a detailed damage assessment but to provide a snapshot of the damage in the assigned area. Completing the survey is critical to the Emergency Operations Center (EOC), so they can report the overall extent of damage in the county and request the appropriate types and numbers of resources. Since completion of the survey is so important, the survey would only be stopped to handle immediate threats to life where intervention will make a positive result in outcome. While this requirement is harsh, it will pay dividends during the first seventy-two hours of a major event. If you are unable to complete the survey, you will still need to report the data you are able to collect.

Any personnel (volunteer or off-duty) moving from their home or other location to their assigned area station or facility would observe damage as they proceed. Their observations would then be relayed to their facility/entity leader, so that the information can be communicated to the EOC.

Although civil unrest did not occur following past events, any civil unrest, looting, or suspicious activity should also be noted on the report.

Specific assigned areas are:

Crescent & Gilchrist – Crescent Fire & Ambulance
Chemult, Beaver Marsh & Diamond Lake Junction – Chemult Fire & Ambulance
Crater Lake National Park – Crater Lake Fire Department / National Park Service
Chiloquin, Agency Lake, & Fort Klamath – Chiloquin – Agency Lake Fire District
Bonanza, Diary & Langell Valley – Bonanza Fire Department
Bly & Beatty – Bly Fire Department
Malin – Malin Fire Department and Malin Police Department
Merrill – Merrill Fire Department and Merrill Police Department
Keno, Worden, & Lakewoods – Keno Fire Department
Rocky Point & Lake of the Woods – Rocky Point Fire & EMS
Stewart-Lennox – Klamath County Fire District No. 4
Bly Mountain – Klamath County Fire District No. 5
Sprague River – Sprague River Fire Department
Moccasin Hills – Klamath County Fire District No. 3
Klamath Falls Airport – Kingsley Field Fire Department and Airport Staff
Kingsley Air National Guard Base – Kingsley Field Fire Department
Glenwood, South Suburbs, South Sixth Street – Klamath County Fire District No. 1 – Station 1
Pine Grove, Shieldcrest, & Mowina Heights – Klamath County Fire District No. 1 – Station 2
Mills Addition, Washburn Way, Railroad District, Downtown – Klamath Avenue and south –
Klamath County Fire District No. 1 – Station 3
Campus Drive, Conger, Pacific Terrace, Downtown – Main Street and north – Klamath County
Fire District No. 1 – Station 4
Falcon Heights & Midland – Klamath County Fire District No. 1 – Station 3 recalled personnel
Bridges on U.S. Highway 97 and state highways in Klamath County – ODOT assigned staff

Specific Essential Facilities are:

Klamath County 911 – Klamath County Emergency Communications District (911) assigned staff

Police Stations – owning agency’s assigned police department staff

Fire Stations – owning fire agency assigned staff

Ambulance Stations – owning ambulance agency assigned staff

Klamath County Sheriff’s Office (KCSO) and Klamath County Jail – KCSO assigned staff

Klamath County Courthouse and Government Buildings – Klamath County assigned staff

City Government Buildings – owning agency’s assigned staff

Merle West Medical Center (MWMC) – MWMC assigned staff

Oregon Institute of Technology (OIT) – OIT assigned staff

Jeld Wen Inc. – Jeld Wen assigned staff

Oregon Department of Transportation (ODOT) District Office – ODOT assigned staff

Klamath County Schools – Klamath County School District assigned staff

Klamath Falls City Schools – Klamath Falls City School District assigned staff

Pacific Power transmission lines & facilities – Pacific Power assigned staff

Bonneville Power Administration (BPA) transmission lines & facilities – BPA assigned staff and assisting Pacific Power assigned staff

Qwest telephone transmission lines & facilities – Qwest assigned staff

Avista Natural Gas transmission lines & facilities – Avista assigned staff

Water storage & pumping facilities – owner agency’s assigned staff

Sewage treatment facilities – owner agency’s assigned staff

Klamath Irrigation Project (multiple agencies) – owner agencies’ assigned staff

Definitions of Damage Levels

None – no apparent damage, no injuries or a few minor injuries, no deaths, no entrapments, no roads blocked by debris. Utilities are generally intact, there may be a power outage; however, there are no transmission lines down.

Light – some minor damage to structures – broken windows, minor cracks in walls, some damage to building contents from impact of event. No deaths and injuries are minor and any entrapments can self-rescue or rescue with use of only hand tools. There are minor amounts of debris in roads but only a few are not passable (less than 25%). Utilities are generally intact, there may be a power outage; there are some transmission lines down (less than 25%).

Moderate – significant damage to structures but they remain standing; portions of structures are displaced on foundation, missing, or collapsed. There are injuries, some of which are life threatening and there may be scattered deaths. There are entrapments that require trained assistance and rescue tools. There are large amounts of debris in roads and 25% to 50% of the roads are not passable. Utilities are generally not intact, there is a power outage, there are many transmission lines down, and some natural gas, water, and/or sewer leaks are present, usually associated with structure damage.

Heavy – significant damage or complete destruction of structures. Almost all persons encountered have at least minor injuries. There are numerous persons with life threatening injuries that overwhelm available resources. There are obvious deaths. There are numerous entrapments requiring technical rescue. There are large amounts of debris in roads and greater than 50% of the roads are not passable without assistance of heavy equipment. Utilities are not intact, there is a power outage, almost all transmission lines are down, there are numerous natural gas, water, and/or sewer leaks, many are not directly associated with structure damage.

Appendix B

Proposed Klamath County

Immediate Damage Assessment Form

**KLAMATH COUNTY
IMMEDIATE DAMAGE SURVEY REPORT**

| Area: | DAMAGE LEVEL | | | |
|---------------------------|--------------|-------|----------|-------|
| | None | Light | Moderate | Heavy |
| Residential Structures | | | | |
| Commercial Structures | | | | |
| Injuries | | | | |
| Deaths | | | | |
| Entrapments | | | | |
| Roads | | | | |
| Utilities | | | | |
| Essential Facilities (EF) | | | | |
| EF Name: | | | | |
| Notes: | | | | |
| | | | | |
| Completed by: | | | Date: | Time: |
| Transmitted to EOC by: | | | Date: | Time: |

Appendix C

Questionnaire Cover Letter

Klamath County Fire District No. 1

143 North Broad Street • Klamath Falls, Oregon 97601
Phone: (541) 885-2056 • Fax: (541) 884-6920 • kcf1@kcf1.com

March 2, 2007,

Dear Public Safety Official,

I am the Fire Chief of Klamath County Fire District No. 1 and a student in the National Fire Academy Executive Fire Officer Program. This program includes an Applied Research Project following each class. My current project is to develop a procedure for Immediate Rapid Damage Assessment to be included in the Klamath County Emergency Operations Plan. This procedure would be for all-hazards and would be utilized by all public safety disciplines and purveyors of public utilities and services.

As stated in the Executive Analysis of Fire Service Operations in Emergency Management Student Manual (2005), an ineffective or delayed immediate damage assessment can cause unreasonable responses to emergencies. These include too few or too many resources being sent to an event or area and incident managers not being aware of areas needing assistance.

Immediate Rapid Damage Assessment is utilized for many purposes during and following a catastrophic event.

1. It provides details on how widespread and catastrophic the event (damage) is
2. It ascertains if emergency services are directly impacted and if so how great.
3. It helps local, county, state, and federal governments decide if a declaration of an emergency is required (disaster declaration)
4. It helps identify resource needs

The purpose of the attached questionnaire is to identify agencies and disciplines that need to be included in the procedure, identify the features of any existing procedures, and help guide the procedure formation.

Please provide your response to the questionnaire by Wednesday, March 28, 2007. If you received this survey by mail, a pre-addressed postage paid envelope is enclosed. If you received this survey by e-mail, you can utilize Microsoft Word to complete the survey and then attach it to a reply e-mail. My e-mail address is dhard@kcf1.com

I appreciate your assistance with this project. Please indicate on the questionnaire if you would like to receive a copy of the results or the Applied Research Project. The final procedure will be shared with all agencies.

Sincerely,

David K. Hard
Fire Chief

Appendix D
Questionnaire

Appendix E

Sample Format for a Flash Report

from Asian Disaster Preparedness Center

SUGGESTED FORMAT FOR A FLASH REPORT

PART 1 – SITUATION

- 1.1. Type of disaster _____
- 1.2. Date and time _____
- 1.3. Affected area _____
- 1.4. Possibility of after effects _____

PART 2 – INITIAL ESTIMATE OF EFFECTS

Very Approximate Numbers

- 2.1. Dead _____
- 2.2. Injured _____
- 2.3. Missing _____
- 2.4. In need of shelter and/or clothing _____
- 2.5. In need of food _____
- 2.6. In need of water _____
- 2.7. In need of sanitation _____
- 2.8. Damage to lifeline systems _____

PART 3 – POSSIBLE NEEDS FOR EXTERNAL ASSISTANCE

- 3.1 Search and Rescue Yes/No
- 3.2 Evacuation Yes/No
- 3.3 Protection Yes/No
- 3.4 Medical and Health Yes/No
- 3.5 Shelter and clothing Yes/No
- 3.6 Food Yes/No
- 3.7 Water Yes/No
- 3.8 Sanitation Yes/No
- 3.9 Repair of lifeline systems Yes/No

PART 4 – NEXT REPORT

The next report, with more details, will be sent at (date/time).

Appendix F

Kosovo Rapid Village Assessment

Kosovo Rapid Village Assessment

| | | |
|--|------------------|---------------|
| Municipality | Village | MGRS Grid Ref |
| Agency | Name of assessor | Date |
| Source of information (give as much detail as possible – give a telephone of someone in the village if possible) | | |

| | | | | | | | | | |
|-----------------------|------------|------------|--------------------|--------------------|-----------------------|------------|------------|--------------------|--------------------|
| ROAD ACCESS IN SUMMER | Car Y/N | 4WD Y/N | Light Truck Y/N | Heavy Truck Y/N | ROAD ACCESS IN WINTER | Car Y/N | 4WD Y/N | Light Truck Y/N | Heavy Truck Y/N |
|-----------------------|------------|------------|--------------------|--------------------|-----------------------|------------|------------|--------------------|--------------------|

| | | | | | | | | | |
|--------------------|----------------|----------|------|-------|-----------|--------|-----------|------|----------|
| CURRENT POPULATION | Persons | Albanian | Serb | Other | BREAKDOWN | Locals | Returnees | IDPs | Refugees |
|--------------------|----------------|----------|------|-------|-----------|--------|-----------|------|----------|

INTERNALLY DISPLACED PERSONS (IDPs) – one record per village of former residence

| Number of IDPs | from MUNICIPALITY (NAME) | from VILLAGE (NAME) | WHAT'S PREVENTING THEIR RETURN HOME? (See constraints to return box below for possible issues) |
|----------------|--------------------------|---------------------|---|
| | | | |

CONSTRAINTS TO RETURN: Transport / house damaged / house occupied / village empty / insecurity / fear of other ethnic groups / access to food and basic needs / healthcare / education / water / electricity / etc.

| | | | | | | |
|---------------------------|--------------|---------|---------------|-------------|-------|-------|
| COMMUNITY LEADERS PRESENT | MTS ACTIVIST | TEACHER | HEALTH WORKER | IMAM/PRIEST | OTHER | OTHER |
| | Name: | | | | | |
| | Tel: | | | | | |

| | | | | | | | | | |
|-------------------------|--|-----|---------------|----------------|---------------|-----------------|---|------|-----------|
| ASSISTANCE DISTRIBUTION | Who is responsible for distribution? (circle or specify) | | | | | | Local warehouse / storage facilities? - | | |
| | MTS | UCK | Mayors Office | Mosque/ Church | NGO (specify) | Other (specify) | Y / N | Type | Size (m2) |

| | | |
|------------------------|--|---|
| SECONDARY DISTRIBUTION | Is this village used for secondary distribution? | If so, which villages receive assistance from this village? |
| | Y / N | |

| | | | | | | |
|--|---|-------------------------------------|------------|------------|------------|------------|
| DAMAGE TO HOUSES (see category guide below) | Total Houses in village | Category 1 (Undamaged / unfinished) | Category 2 | Category 3 | Category 4 | Category 5 |
| | Was there any new war damage to buildings since JANUARY 1999? Y / N | | | | | |
| | Was there any new war damage to buildings since NATO arrived? Y / N | | | | | |

| | | | | | | |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------|
| DAMAGE TO COMMUNITY BUILDINGS | MTS WAREHOUSE | SCHOOL | MOSQUE/CHURCH | SHOPS | BAKERY | HEALTH FAC. |
| | None / Category | Category |

Note: Circle 'None' if no such building exists within the village

| | | | |
|---|---|---|---|
|  <p>2</p> <ul style="list-style-type: none"> Broken windows, door locks and hinges, roof tiles Cut-off from electricity, water Can be repaired |  <p>3</p> <ul style="list-style-type: none"> Up to 30% roof damage Light shelling or bullet impact on walls Partial fire damage Can be repaired |  <p>4</p> <ul style="list-style-type: none"> Over 30% roof damage Severe fire damage Need for replacement of floors Doors and windows destroyed All piping, wiring destroyed Can be repaired |  <p>5</p> <ul style="list-style-type: none"> Destroyed Needs reconstruction Cannot be repaired |
|---|---|---|---|

| | | | | |
|-------------|----------|-------------------------|--|--|
| ELECTRICITY | Working? | Yes / No / Intermittent | If intermittent, approx. hours working per day | |
|-------------|----------|-------------------------|--|--|

| | | | | |
|-----------|---------------------|----------|----------------------|--|
| EDUCATION | School functioning? | Yes / No | Number of classrooms | |
|-----------|---------------------|----------|----------------------|--|

| WATER & SANITATION | % of Households using | | CURRENT STATUS* | PERCEIVED WATER... | | REMARKS |
|--------------------|-----------------------|---------|-----------------|--------------------|-----------------------|---------|
| | Pre-Conflict | Current | | QUALITY | QUANTITY | |
| Wells | | | | Good / Bad | Adequate / Inadequate | |
| Springs | | | | Good / Bad | Adequate / Inadequate | |
| Piped distribution | | | | Good / Bad | Adequate / Inadequate | |
| Electric Pumps | | | | Good / Bad | Adequate / Inadequate | |

*STATUS (more than one if necessary): (W)orking / (D)amaged / (C)ontaminated / d(E)stroyed

HEALTH (for TYPE, if Ambulanta circle one: MTS = Mother Theresa; S = State; P = Private; for Personnel: (D)octor, (N)urse, (M)ed. Tech for Drugs and Equipment: (A)dequate; (I)nadequate.)

| TYPE and NUMBER | Daily Consult's | Working | Personnel (number) | Drugs | Equipment | Water | Sanitation |
|------------------------------|-----------------|---------|--------------------|-------|-----------|-------|------------|
| ___ Hospital(s) | Number: | Y / N | ___ D ___ N ___ M | A / I | A / I | Y / N | Y / N |
| ___ Shtepia e Shendetit (DZ) | Number: | Y / N | ___ D ___ N ___ M | A / I | A / I | Y / N | Y / N |
| Ambulanta: MTS / S / P | Number: | Y / N | ___ D ___ N ___ M | A / I | A / I | Y / N | Y / N |

| FOOD AND COOKING | | | | | | | |
|--|--|--|--|---|-------|--------------------|-------|
| % of dairy cattle remaining | | | | % of farms expecting to harvest this summer | | | |
| % of families with cooking facilities: | | | | Is there a bakery? | Y / N | Is it operational? | Y / N |

| SOURCES OF FOOD AVAILABLE IN VILLAGE | | Food Item | AVAILABLE | PRICE | |
|--------------------------------------|-------|--------------------|-----------|----------|-------|
| Humanitarian distribution | Y / N | Wheat flour | Y / N | DM / Din | Kg |
| Household garden / farm | Y / N | Oil | Y / N | DM / Din | Litre |
| Household stores | Y / N | Sugar | Y / N | DM / Din | Kg |
| Shops or market | Y / N | Meat | Y / N | DM / Din | Kg |
| Nearest village with market | | Fruit & vegetables | Y / N | DM / Din | Kg |
| | | Coffee | Y / N | DM / Din | Kg |

| ACTION TAKEN |
|--------------|
| |

| REMARKS |
|---------|
| |