

City of Johnson City

Natural Hazards Mitigation Plan Addendum

Prepared for
City of Johnson City
16121 SE 81st Avenue
Johnson City, OR 97267

In cooperation with

Clackamas County Emergency Management
2200 Kaen Road
Oregon City, OR 97045

Adopted by City Council on December 21, 2009



FEMA

January 13, 2010

Honorable Lynn Peterson,
Chair, Board of County Commissioners
2051 Kaen Road
Oregon City, OR 97045

Dear Chair Peterson:

On October 19, 2007, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) approved the *Clackamas County Natural Hazards Mitigation Plan Update 2007* as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through October 19, 2012:

Clackamas County
City of Estacada
City of Oregon City

City of Canby
City of Johnson City
City of Sandy

City of Damascus
City of Milwaukie
City of West Linn

The list of approved jurisdictions has been updated to include the Cities of Johnson City and Sandy, which have recently adopted the *Clackamas County Natural Hazards Mitigation Plan Update 2007*. To continue eligibility the plan must be reviewed, revised as appropriate, and resubmitted within five years of the original approval date.

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact our state counterpart, Oregon Emergency Management, which coordinates and administers these efforts for local entities.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Carey".

Mark Carey, Director
Mitigation Division

cc: Dennis Sigrist, Oregon Emergency Management

KM:bb

RESOLUTION NO. 264

**A RESOLUTION ADOPTING THE CITY OF JOHNSON CITY'S REPRESENTATION IN THE
CLACKAMAS COUNTY MULTI-JURISDICTION HAZARD MITIGATION PLAN**

WHEREAS, the City of Johnson City is vulnerable to the human and economic costs of natural, technological and societal disasters, and

WHEREAS, the City Council of Johnson City recognizes the importance of reducing or eliminating those vulnerabilities for the overall good and welfare of the community, and

WHEREAS, the City of Johnson City has participated in the development of the Clackamas County Multi-Jurisdiction Natural Hazard Mitigation Plan, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities, and

WHEREAS, the City of Johnson City's representatives and staff have identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the City of Johnson City to the impacts of future disasters, and

WHEREAS, these proposed projects and programs have been incorporated into the Clackamas County Multi-Jurisdiction Natural Hazard Mitigation Plan that has been prepared and promulgated for consideration and implementation by the cities of Clackamas County; NOW THEREFORE

THE COUNCIL OF THE CITY OF JOHNSON CITY RESOLVES AS FOLLOWS:

Section 1. The Council of the City of Johnson City hereby accepts and approves of its section of the Clackamas County Multi-Jurisdiction Hazard Mitigation Plan as a reasonable process to identify and plan for potential hazards in the City of Johnson City and Clackamas County,

Section 2. The agency personnel of the City of Johnson City are requested and instructed to pursue available funding opportunities for implementation of the actions and proposals designated therein,

Section 3. The City of Johnson City will, upon receipt of such funding or other necessary resources, seek to implement the mitigation proposals identified by the jurisdiction's Hazard Mitigation Planning Committee, and

Section 4. The City of Johnson City will continue to participate in the updating and expansion of the Clackamas County Multi-Jurisdiction Hazard Mitigation Plan in the years ahead, and

Section 5. The City of Johnson City will further seek to encourage the businesses, industries and community groups operating within and/or for the benefit of the City of Johnson City to also participate in the updating and expansion of the Clackamas County Multi-Jurisdiction Hazard Mitigation Plan in the years ahead.

ADOPTED BY THE CITY COUNCIL AND APPROVED BY THE MAYOR, this 21st day of December 2009.



Kay Mordock, Mayor

ATTEST:



Judy Davis, City Recorder

City of Johnson City Natural Hazards Mitigation Plan Addendum

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Overview

What is Natural Hazard Mitigation?

Natural hazard mitigation is defined as permanently reducing or alleviating the losses of life, property and injuries resulting from natural hazards through long and short-term strategies. Example strategies include policy changes, such as updated ordinances; projects, such as seismic retrofits to critical facilities; education and outreach to targeted audiences, such as Spanish speaking residents, or the elderly. Mitigation is the responsibility of individuals, private businesses and industries, state and local governments, and the federal government.

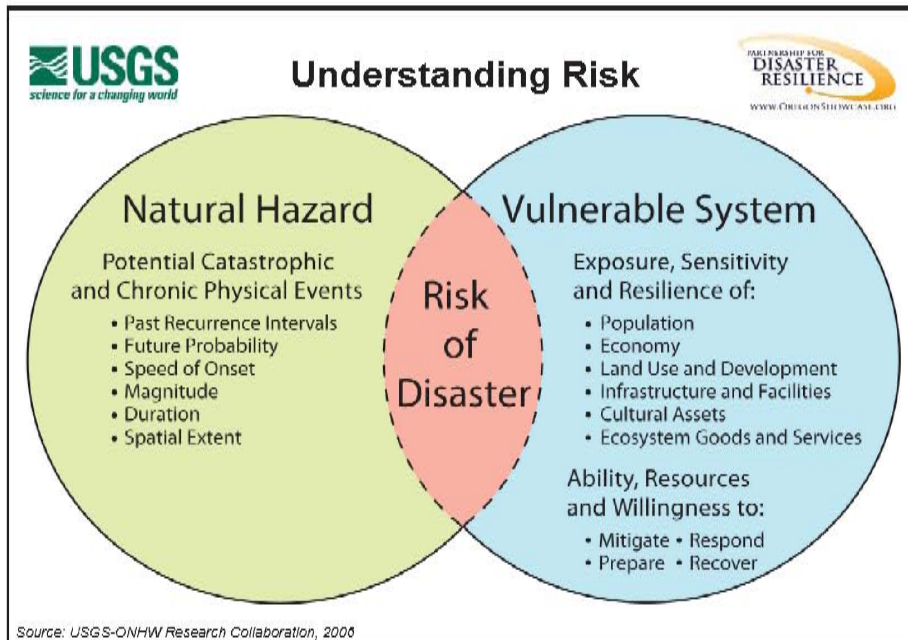
Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

Why Develop a Mitigation Plan?

Johnson City developed this addendum to the Clackamas County multi-jurisdictional Natural Hazards Mitigation Plan in an effort to reduce future loss of life and damage to property resulting from natural hazards. It is impossible to predict exactly when disasters will occur, or the extent to which they will affect the city. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from natural hazards.

The figure below is utilized throughout the plan to illustrate the concepts of risk reduction.

Figure 1 Understanding Riskⁱ



A natural hazard mitigation plan can assist the community in understanding what puts the community at risk. By identifying and understanding the relationship between natural hazards, vulnerable systems, and existing capabilities, Johnson City can become better equipped to identify and implement actions aimed at reducing the overall risk of hazards.

This plan focuses on the primary natural hazards that could *affect* Johnson City, Oregon, which include flood, landslide, wildfire, severe storms, earthquake and volcano. The dramatic increase in the costs associated with natural disasters over the past decades has fostered interest in identifying and implementing effective means of reducing vulnerability. A report submitted to Congress by the National Institute of Building Science’s Multi-hazard Mitigation Council (MMC) highlights that for every dollar spent on mitigation, society can expect an average savings of \$4.ⁱⁱ This addendum to the Clackamas County multi-jurisdictional Natural Hazards Mitigation Plan is intended to assist Johnson City in reducing its risk from natural hazards by identifying resources, information, and strategies for risk reduction.

The plan is strategic and non-regulatory in nature, meaning that it does not necessarily set forth any new policy. It does, however, provide: (1) a foundation for coordination and collaboration among agencies and the public in the city; (2) identification and prioritization of future mitigation activities; and (3) aid in meeting federal planning requirements and qualifying for assistance programs. The mitigation plan works in conjunction with other city plans and programs including the city’s Comprehensive Plan, as well as the State of Oregon Natural Hazards Mitigation Plan.

The plan provides a set of actions to prepare for and reduce the risks posed by natural hazards through education and outreach programs, the development of partnerships, and

the implementation of preventative activities. The actions described in the plan are intended to be implemented through existing plans and programs within the city.

Policy Framework for Natural Hazards in Oregon

Planning for natural hazards is an integral element of Oregon's statewide land use planning program, which began in 1973. All Oregon cities and counties have comprehensive plans and implementing ordinances that are required to comply with the statewide planning goals. The challenge faced by state and local governments is to keep this network of local plans coordinated in response to the changing conditions and needs of Oregon communities.

Statewide land use planning Goal 7: Areas Subject to Natural Hazards calls for local plans to include inventories, policies and ordinances to guide development in or away from hazard areas. Goal 7, along with other land use planning goals, has helped to reduce losses from natural hazards. Through risk identification and the recommendation of risk-reduction actions, this plan aligns with the goals of the jurisdiction's Comprehensive Plan, and helps each jurisdiction meet the requirements of statewide land use planning Goal 7.

The primary responsibility for the development and implementation of risk reduction strategies and policies lies with local jurisdictions. However, resources exist at the state and federal levels. Some of the key agencies in this area include Oregon Emergency Management (OEM), Oregon Building Codes Division (BCD), Oregon Department of Forestry (ODF), Oregon Department of Geology and Mineral Industries (DOGAMI), and the Department of Land Conservation and Development (DLCD).

The Disaster Mitigation Act of 2000 (DMA 2000) is the current federal legislation addressing mitigation planning. It reinforces the importance of mitigation planning and emphasizes planning for natural hazards before they occur. As such, this Act established the Pre-Disaster Mitigation (PDM) grant program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). Section 322 of the Act specifically addresses mitigation planning at the state and local levels, and CFR 201 provides information on the policies and procedures for mitigation planning. Local jurisdictions must have approved mitigation plans in place in order to qualify to receive post-disaster HMGP funds. Additionally, mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to the individual and their capabilities.

Section 1: Planning Process

1.1 How was the Addendum Developed?

In the fall of 2007, the Oregon Partnership for Disaster Resilience (OPDR / the Partnership) at the University of Oregon's Community Service Center partnered with Oregon Emergency Management, Resource Assistance for Rural Environments (RARE), Clackamas County, and cities within Clackamas County to develop a Hazard Mitigation Grant Program (HMGP) planning grant proposal. The City of Johnson City joined the Partnership by signing a memorandum of understanding for this project. FEMA awarded the Partnership with a grant to support the development and update of city addenda in Clackamas County, and Johnson City's local planning efforts began in May, 2009. RARE provided a staff person ('RARE Participant') to facilitate and document the city's addendum development process.

Participants in Planning Process

Representatives from the city's Hazard Mitigation Task Force (HMTF) served as steering committee members for Johnson City's natural hazards mitigation planning process.

Committee members included:

- Elizabeth Collins, Johnson City Council
- Judy Davis, Johnson City Recorder
- Kevin Donegan, Clackamas Fire District #1
- Kim Glover, Johnson City Council
- Brian Johnson, Johnson Mobile Estates CEO
- Bill Mordock, Johnson City Planning Commission
- Kay Mordock, Mayor of Johnson City
- Laurel Reimer, Clackamas County Emergency Management/RARE

Planning Process

The RARE Participant and Clackamas County Emergency Management developed and facilitated three plan development meetings with the Hazard Mitigation Advisory Committee on May 5th, June 2nd, and June 23rd, 2009. Please see Appendix A for meeting agendas and minutes.

Introduction – May 5, 2009: the RARE participant met with members of the HMTF to provide an overview of the planning process as well as federal mitigation planning requirements. The RARE Participant provided a rough agenda for the two subsequent planning meetings and explained what assistance she would need from the HMTF. Finally, the committee developed a list of community assets and provided comments on the community profile information that the RARE Participant drafted prior to the meeting.

Risk Assessment – June 2, 2009: Between May and June 2009, the RARE Participant researched the causes and characteristics of natural hazards in Johnson City, as well as past events. On June 2, 2009 the RARE Participant facilitated the first of two plan development meetings with the HMTF. Group members identified and discussed past hazard events, vulnerable systems within the community, and existing emergency management capabilities. Additionally, the group identified various public involvement activities to implement during the planning process, as well as continued public involvement strategies that could occur after the plan’s completion. The HMTF also identified a future coordinating body for Johnson City’s Natural Hazards Mitigation Plan Addendum, as well as a plan convener.

Action Items – June 23, 2009: Between May and June, 2009 the RARE Participant drafted the community’s Risk Assessment (see Section 3 below), and developed a list of potential mitigation actions based on vulnerabilities identified at the June 2nd plan development meeting. On June 23rd, 2009, the RARE Participant facilitated the second of two plan development meetings with the HMTF. Group members discussed the RARE Participant’s proposed mitigation actions, and developed a final list of actions. Additionally, the HMTF developed a future meeting schedule (see 1.3 Plan Implementation and Maintenance below).

Public Involvement

Following completion of the final draft, the city requested that citizens provide input and/or comment on the plan’s content. Clackamas County’s project webpage located on the Partnership’s website (www.oregonshowcase.org/plans/clackamas) hosted plan drafts during the plan development process. Upon completion of a final draft, the city posted general information flyers in key locations in the city and published an announcement in the Johnson City Newsletter. The newsletter announcement detailed the planning process and informed residents where they could find the final draft of the plan. Residents were given two weeks to review the plan and send comments to the city recorder. A copy of the newsletter announcement can be found in Appendix A of this plan.

Adoption

The City of Johnson City adopted the Clackamas County Natural Hazards Mitigation Plan via resolution on December 21, 2010.

1.2 Addendum Mission and Goals

Because this is an addendum to the Clackamas County Natural Hazards Mitigation Plan, Johnson City has chosen to adopt Clackamas County’s Plan mission and goals. The city’s Hazard Mitigation Task Force believes that Clackamas County’s plan mission and goals accurately reflect those of Johnson City as well. Likewise, adopting the county’s mission and goals promotes cohesion between the two plans.

Mission

The mission of the Clackamas County Natural Hazards Mitigation Plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards. This can be achieved by increasing

public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the county towards building a safer, more sustainable community.

Goals

Protect Life and Property

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural hazards.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to natural hazards.

Promote Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Enhance Natural Systems

- Balance watershed planning, natural resource management, and land use planning with natural hazard mitigation to protect life, property, and the environment.
- Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

Encourage Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

Augment Emergency Services

- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.
- Coordinate and integrate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

1.3 Plan Implementation and Maintenance

This section details the formal process that will ensure that the Johnson City Addendum to the Clackamas County Natural Hazards Mitigation Plan remains an active and relevant document. The plan implementation and maintenance process includes a schedule for monitoring and evaluating the plan annually, as well as producing an updated plan every

five years. Finally, this section describes how the city will integrate public participation throughout the plan maintenance and implementation process.

Implementing the Plan

After the plan is locally reviewed and deemed complete, the city recorder will submit the plan to the State Hazard Mitigation Officer at Oregon Emergency Management. Oregon Emergency Management submits the plan to the Federal Emergency Management Agency (FEMA--Region X) for review. This review addresses the federal criteria outlined in the FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the City Council of Johnson City will adopt the plan via resolution. At that point the city will gain eligibility for the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program, and the Flood Mitigation Assistance program.

Coordinating Body

The Hazard Mitigation Task Force (HMTF) will serve as the coordinating body for Johnson City's Natural Hazards Mitigation Plan Addendum. Roles and responsibilities of the coordinating body include:

- Serving as the local evaluation committee for funding programs such as the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program, and Flood Mitigation Assistance program;
- Prioritizing and recommending funding for natural hazard risk reduction projects;
- Encouraging stakeholders and relevant hazard mitigation organizations and agencies to implement and/or report of implementation on the plan's identified action items;
- Evaluating and updating the Natural Hazards Mitigation Plan Addendum following a disaster;
- Evaluating and updating the Natural Hazards Mitigation Plan Addendum in accordance with the prescribed plan maintenance schedule; and
- Developing and coordinating ad hoc and/or standing subcommittees. The HMTF will engage relevant organizations, agencies, and/or neighboring communities as technical advisers in hazard mitigation as needed.

Convener

The Johnson City Emergency Manager (from Clackamas Fire District #1) will serve as the plan's convener. The convener's roles and responsibilities include:

- Assigning additional stakeholders and representatives to the coordinating body as needed;
- Coordinating HMTF meeting dates, times, locations, agendas, and member notification;
- Documenting the outcomes of HMTF meetings;
- Serving as a communication conduit between the HMTF and the public and/or key plan stakeholders;
- Identifying emergency management-related funding sources for natural hazard mitigation projects;

- Utilizing the risk assessments as a tool for prioritizing proposed natural hazard risk reduction projects; and
- Facilitating and documenting the plan's five-year update.

Implementation through Existing Programs

This plan is strategic and non-regulatory in nature, meaning that it does not set forth any new policy. It does, however, provide: (1) a foundation for coordination and collaboration among agencies and the public in the city; (2) identification and prioritization of future mitigation activities; and (3) aid in meeting federal planning requirements and qualifying for assistance programs. The mitigation plan works in conjunction with other city plans and programs including the Comprehensive Plan and Building Codes, as well as the Clackamas County Natural Hazards Mitigation Plan, and the State of Oregon Natural Hazards Mitigation Plan. The mitigation actions described in Section 4 below are intended to be implemented through existing plans and programs within the city. Implementation opportunities are further defined in the action item worksheets (see Appendix B) when applicable.

Plan Maintenance

Plan maintenance is a critical component of the natural hazard mitigation plan addendum. Proper maintenance of the plan ensures that this plan will maximize the city's efforts to reduce the risks posed by natural hazards. This section includes a process to ensure that regular review and update of the plan occurs. The Hazard Mitigation Task Force and Emergency Manager will be responsible for maintaining the plan.

Semi-Annual Meetings

The HMTF will meet on a semi-annual basis. Meetings will be held in the spring and fall of each year to allow the committee to debrief on the previous hazard seasons and prepare for the upcoming hazard seasons. In addition to debriefing and preparing for the upcoming hazard seasons, at each spring meeting the committee will:

- Document hazard events that occurred in the previous fall and winter months;
- Prepare public education pieces for the upcoming spring and summer month hazards;
- Discuss funding opportunities for the implementation of mitigation strategies;
- Review existing action items to determine appropriateness for funding;
- Educate new members about the plan and mitigation in general; and
- Identify issues that may not have been identified when the plan was developed.

During the second meeting of each year, the committee will:

- Document hazard events that occurred in the previous spring and summer months;
- Prepare public education pieces for the upcoming fall and winter month hazards;
- Review existing and new risk assessment data, and incorporate this information into the plan;
- Discuss the addition and/or subtraction of mitigation actions from the plan;
- Discuss methods for continued public involvement;

- Document successes in implementing mitigation actions and/or applying for funding and lessons learned during the year; and
- Generate a list of members that should be included in future meetings.

The convener will be responsible for documenting the outcome of the semi-annual meetings. The process the HMTF will use to prioritize mitigation projects is detailed in Section 4 below. The plan's format allows the city to review and update sections when new data becomes available. New data can be easily incorporated, resulting in a natural hazards mitigation plan that remains both current and relevant.

Five-Year Plan Update

Local mitigation plans must be updated and resubmitted to the Federal Emergency Management Agency (FEMA) for approval every five years in order to maintain eligibility for federal hazard mitigation assistance programs.¹ Plan updates must demonstrate that progress has been made in the past five years for local mitigation plans to fulfill commitments outlined in the previously approved plan.

Johnson City's Natural Hazards Mitigation Plan Addendum will be updated every five years in accordance with the Disaster Mitigation Act of 2000. Because this is an addendum to the Clackamas County Natural Hazards Mitigation Plan, the addendum must be updated in conjunction with the county's five-year plan update schedule. As such, Johnson City must update this addendum by September 2012 (and then again five years thereafter). Sufficient time should be allotted for plan update activities and FEMA review, meaning the city will begin the plan update process by September 2011. Additional time will be needed if the city intends to pursue application for mitigation planning grants, and/or contracting for technical or professional services.

During the five-year plan update, the city must review and revise its plan to reflect changes in development, progress in mitigation efforts, and changes in priorities. The following questions will be asked to determine what actions are necessary in updating the addendum:

- Have public involvement activities taken place since the plan was adopted?
- Are the plan goals still relevant?
- Is mitigation being implemented through existing planning mechanisms (such as comprehensive plans, or capital improvement plans)?
- Are there new hazards that should be addressed?
- Have there been hazard events in the community since the plan was adopted?
- Have new studies or previous events identified changes in any hazard's location or extent?
- Has vulnerability to any hazard changed?
- Have development patterns changed? Is there more development in hazard prone areas?

¹ 44 CFR 201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

- Do future annexations include hazard prone areas?
- Did the plan identify the number and type of existing and future buildings, infrastructure, and critical facilities in hazards areas?
- Are there new high risk populations?
- Did the plan document and/or address National Flood Insurance Program repetitive loss properties?
- Is there an action item dealing with continued compliance with the National Flood Insurance Program?
- Did the plan identify data limitations?
- Did the plan identify potential dollar losses for vulnerable structures?
- What is the status of each mitigation action?
- Are there completed mitigation actions that have decreased overall vulnerability?
- Are there new actions that should be added?
- Are changes to the action item prioritization, implementation, and/or administration processes needed?
- Do changes need to be made within the five year update schedule?

The convener will be responsible for (1) organizing the HMTF to address plan update needs; (2) updating any deficiencies found in the plan, and (3) ensuring the plan meets the Disaster Mitigation Act of 2000's plan update requirements.

Continued Public Involvement & Participation

The City of Johnson City is dedicated to involving the public directly in the continual reshaping and updating of the Natural Hazards Mitigation Plan Addendum. Although members of the HMTF represent key community constituencies, the general public will have the opportunity to provide feedback on future plan amendments and updates.

During the plan development process, public participation was incorporated into every stage of the plan development process. To ensure that these opportunities will continue, hard copies of the plan will be available at City Hall. Articles about the plan will be published in the Johnson City Newsletter. A copy of the plan will be brought to community events, such as the annual Picnic in the Park. Lastly, public meetings regarding plan content will be scheduled when deemed necessary, such as after a natural hazard event.

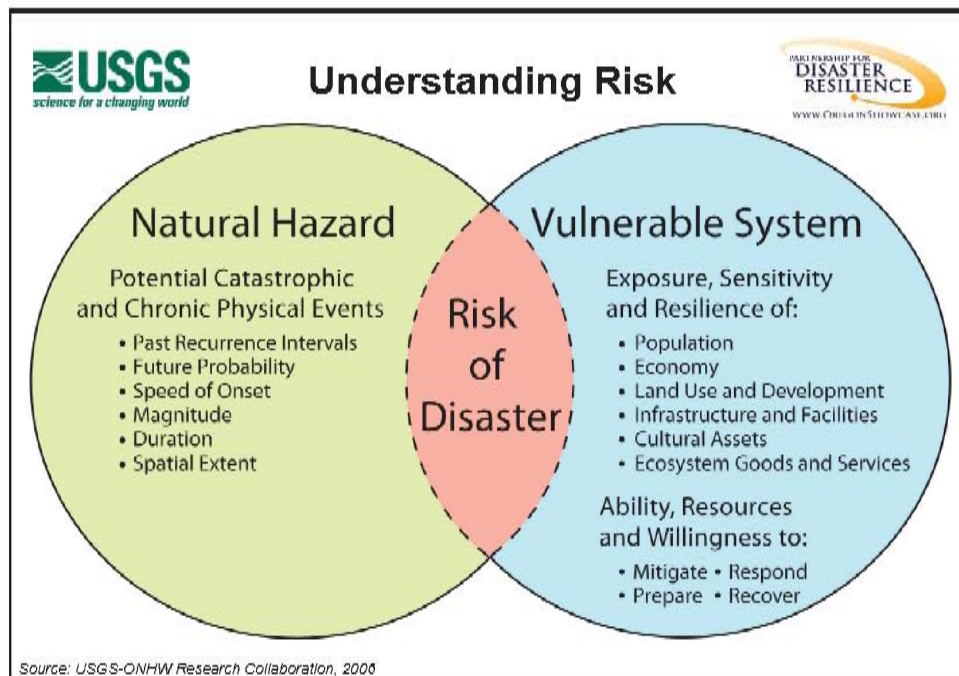
In addition to the involvement activities listed above, the city's Natural Hazards Mitigation Plan Addendum has been archived and posted on the University of Oregon Libraries' Scholar's Bank Digital Archive.² Contact information is posted on all plan copies in order to facilitate public comment.

² University of Oregon Scholars Bank, Natural Hazards Mitigation Plans:
<https://scholarsbank.uoregon.edu/xmlui/handle/1794/1930>

Section 2: Community Profile

The following section describes the City of Johnson City from a number of perspectives in order to help define and understand the city's sensitivity and resilience to natural hazards. Sensitivity factors can be defined as those community assets and characteristics that may be impacted by natural hazards, (e.g., special populations, economic factors, and historic and cultural resources). Community resilience factors can be defined as the community's ability to manage risk and adapt to hazard event impacts (e.g., governmental structure, agency missions and directives, and plans, policies, and programs). The information in this section represents a snapshot in time of the current sensitivity and resilience factors in the city when the plan was developed. The information documented below, along with the hazard assessments located in Section 3: Hazard Assessment should be used as the local level rationale for the city's mitigation strategies. The identification of actions that reduce the city's sensitivity and increase its resilience assist in reducing overall risk, or the area of overlap in Figure 1 below.

Figure 2 Understanding Riskⁱⁱⁱ



2.1 Geography & Environment

Johnson City is located in the Willamette Valley 5 miles southeast of the City of Portland near the intersection of Highways 224/212 and Interstate 205. Johnson City is laid out in three sections – a main section and two cul-de-sacs separately accessed from Roots Road. The main section, where the majority of the homes are located, is accessed by two streets off of Roots Road.

Major bodies of water near Johnson City include Lake Leona and Kellogg Creek. Kellogg Creek's headwaters are only a few hundred feet to the east of the city, but the creek does not enter Johnson City limits. Lake Leona is approximately five acres in surface area with depths ranging from three to ten feet. When necessary, the lake's outlet can be controlled. Underlying the lake is a sizeable gravel deposit approximately 120 feet deep, which is an aquifer of the regional water table system. The gravel was partially excavated in the 1970s to remove vegetation and silt which were fouling the water. Turtles, ducks, blue heron, and Canadian geese live at the lake.^{iv}

Adjacent to the lake is eight-tenths of an acre open land and a slope along Roots Road. Vegetation consists of native shrubs, Douglas fir and cottonwood trees, and most of the land is covered with planted turf.

Johnson City experiences a moderate climate. In August the average high temperature is 82 degrees and the average low temperature is 35 degrees while January has an average high temperature of 46.5 degrees and an average low temperature of 33 degrees. The city receives an annual precipitation of about 47.06 inches.^v

2.2 History & Growth Potential

Johnson City is unusual among Oregon cities. In phases, beginning in 1960, Johnson Mobile Park, Inc. (JMP) developed a forty-five acre mobile home park in Clackamas County near the City of Gladstone. Approximately ten years later, the residents of the mobile home park unsuccessfully tried to obtain sewer and other services by requesting annexation into to the City of Gladstone. Then, in 1971, the citizens of Johnson Mobile Estates voted to incorporate. Johnson City then obtained its charter and elected a mayor and city council.

Johnson City is a planned mobile home park, so there is little opportunity for further development or expansion. The slope along Roots Road is the only area that could be developed. It was zoned MR1 at the time of the latest city Comprehensive Plan.

2.3 Ownership

Most of the land within the forty-five acre city continues to be owned by Johnson Mobile Park, Inc (JMP), including all the residential lots, streets, and the five-acre lake. Residents purchase their homes privately, but lease their lots from the company. The company provides sewer, water and garbage services. Payment for these services is included in rent the residents pay to JMP. The roads and streetlights are owned by the company but leased to the city, which maintains them. The company also owns the manager house/office, laundry building, empty water tower, a sewer flow station, and a utility yard. Residents can rent space for recreational vehicles in a company owned fenced lot on site. The city owns City Hall and a passive park space adjacent to Lake Leona.

2.4 Population & Demographics

Johnson City has been a small community since it was incorporated in 1970. In the past ten years, the population has not grown significantly. Since 2000, the city has increased by 40 people in comparison with the 36,600 person increase in Clackamas County. Table 2.1 shows the city's estimated population growth between the 2000 Census and 2008. Table 2.2 shows the distribution of race within the community.

Table 2.1 Population Change from 2000 to 2008

Year	Johnson City	Percent Change	Clackamas County	Percent Change	Oregon	Percent Change
2000	635		340,000		3,436,750	
2001	630	-0.79%	345,150	1.5%	3,471,700	1%
2002	630	0%	350,850	1.7%	3,504,700	1%
2003	630	0%	353,450	0.7%	3,541,500	1.1%
2004	630	0%	356,250	0.8%	3,582,600	1.2%
2005	630	0%	361,300	1.4%	3,631,440	1.4%
2006	675	7.14%	367,040	1.6%	3,690,505	1.6%
2007	675	0%	372,270	1.4%	3,745,455	1.5%
2008	675	0%	376,660	1.2%	3,791,060	1.2%

Source: Portland State University Research Center^{vi}

Table 2.2 Population by Race in 2000

Race	Number	Percent
White	594	93.7%
Two or more races	13	2.1%
Hispanic or Latino	10	1.6%
Some other race	10	1.6%
American Indian or Alaska Native	7	1.1%
Black	7	1.1%
Asian	3	0.5%
Native Hawaiian and other Pacific Islander	0	0.0%

Source: US Census Bureau, 2000 Census^{vii}

Disaster impacts in terms of loss and the ability to recover vary among population groups following a disaster. Historically, 80% of the disaster burden falls on the public. Of this number, a disproportionate burden is placed upon special needs groups, particularly children, the elderly, the disabled, minorities, and low income persons. Portions of Johnson City's residents fall into these special needs populations. According to the 2000 Census, approximately 8.1% of Johnson City's population had an income below the poverty level.

Table 2.3 shows that 15.1% of the population, or 96 people, are 65 years of age or older. Elderly individuals require special consideration due to their sensitivities to heat and cold, their reliance upon public transportation for medications, and their comparative difficulty in making home modifications that reduce risk to hazards. Language barriers

can also hinder public outreach strategies with residents who speak English as a second language. According to the 2000 census, 5.6% of Johnson City residents speak a language other than English, and 2.3% of the population 5 years and over speaks English less than “very well.” More information on the city’s special needs populations is shown in Tables 2.3 - 2.5.

Table 2.3 Population by Age, 2000

Age Range	Total Persons	% of Total Population
Under 5	35	5.5%
5 to 19	114	18.0%
20 to 44	221	34.9%
45 to 64	168	26.5%
65 and over	96	15.1%
Total	634	100%

Source: US Census Bureau, 2000 Census^{viii}

Table 2.4 Disabled Population 2000

Age	Number of People
5 to 15	3
16 to 64	61
65 and older	38
Total	102
Percent of Population	16.1%

Source: US Census Bureau, 2000 Census^{ix}

Table 2.5 Speak English Less Than Very Well, 2000

Speak English less than "very well"	Total	Percent
5 to 17 years	4	0.7%
18 to 64 years	10	1.6%
65 years and over	0	0.0%
Total	14	2.3%

Source: US Census 2000

2.5 Housing

Housing type and age are important factors in mitigation planning. Certain housing types tend to be less disaster resistant and warrant special attention: mobile homes, for example, are generally more prone to wind and water damage than standard stick-built homes. Generally the older the home is, the greater the risk of damage from natural disasters. This is because stricter building codes have been developed following improved scientific understanding of plate tectonics and earthquake risk. For example, structures built after the late 1960s in the Northwest and California use earthquake resistant designs and construction techniques. In addition, FEMA began assisting communities with floodplain mapping during the 1970s, and communities developed

ordinances that required homes in the floodplain to be elevated to one foot above Base Flood Elevation.

As of 2000, Johnson City had 286 housing units of which 275 were occupied and 11 were vacant. Of these occupied housing units 94.5% were owner-occupied and 5.5%, were renter occupied. The median year housing structures were built is 1983, meaning a good portion of the city’s housing stock was built before stricter seismic and floodplain building codes were put in place. Significantly, roughly 95% of all housing in Johnson City consists of manufactured dwellings. As noted above, manufactured dwellings tend to be less resilient to disaster impacts and therefore require special attention. The median value of an owner-occupied home in 2000 was \$63,300. Please see Tables 2.6 and 2.7 below for more information regarding Johnson City’s housing characteristics.

Table 2.6 Housing by Type, 2000

Housing Type	Total Structures	% of Structures
Single-Family Unit	15	5.4%
Mobile home	263	94.6%
Duplex	0	0.0%
Multi-Family 3 to 4 units	0	0.0%
Boat, RV, van, etc.	0	0.0%
Total	278	100%

Source: US Census Bureau, 2000

Table 2.7 Age of Housing Structures

Year structure built	Number of Structures	% of Structures
1990 to March 2000	69	24.3%
1980 to 1989	105	37.0%
1970 to 1979	89	31.3%
1960 to 1969	19	6.7%
1950 to 1959	2	0.7%
1940 to 1949	0	0.0%
1939 and earlier	0	0.0%
Median	1983	100%

Source: US Census Bureau, 2000

2.6 Employment & Economics

According to the Oregon Employment Department, Clackamas County’s principal industries include paper, lumber, agriculture and manufacturing of fabricated metal products and industrial machine and equipment. In total, there are 651 manufacturing companies in Clackamas County. Johnson City has zero manufacturing companies, zero financial institutions, and no major employers. Of Johnson City’s 635 residents, about 324 are employed. The majority of residents work in “sales and office occupations” (see

Table 2.8 below). Additionally, the majority of Johnson City’s working residents work in the “retail trade” industry (see Table 2.9 below).

Table 2.8 Occupation - Johnson City

Occupation	Total Persons Employed	% of Working Population
Sales and office occupations	83	25.6%
Production, transportation, and material moving occupations	74	22.8%
Service occupations	70	21.6%
Management, professional, and related occupations	63	19.4%
Construction, extraction, and maintenance occupations	34	10.5%
Farming, fishing, and forestry occupations	0	0%
Civilian employed population 16 years and over	324	100%

Source: US Census Bureau, 2000

Table 2.9 Employment Industries - Johnson City

Industry	Total Persons Employed	% of Working Population
Retail trade	74	22.8%
Educational, health and social services	54	16.7%
Manufacturing	45	13.9%
Professional, scientific, management, administrative, and waste management services	29	9%
Wholesale trade	28	8.6%
Other services (except public administration)	25	7.7%
Arts, entertainment, recreation, accommodation and food services	21	6.5%
Construction	20	6.2%
Transportation and warehousing, and utilities	10	3.1%
Information	5	1.5%
Public administration	5	1.5%
Agriculture, forestry, fishing and hunting, mining	4	1.2%
Finance, insurance, real estate, and rental and leasing	4	1.2%
Civilian employed population 16 years and over	324	100%

Source: US Census Bureau, 2000

Median income can be used as an indicator of the strength of the community’s stability. In 2000, the median household income in Johnson City was \$35,517. Low-income residents may be more vulnerable to the impacts of natural hazard events, and may limit the community’s ability to quickly recover after a natural disaster. According to the 2000 census, 6.1 % of families in Johnson City are considered to be below poverty status.

2.7 Transportation and Commuting Patterns

Transportation is an important consideration when planning for emergency service provisions. Growth within the city will put pressure on both major and minor roads,

especially if the main mode of travel is by single occupancy vehicles. How people travel to work is indicative of the prevalence of single occupancy vehicle travel, and can help predict the amount of traffic congestion and the potential for accidents. Table 2.10 shows the different methods city residents use to travel to work.

Table 2.10 Transportation Mode Used to Commute to Work, 2000

Mode of Commute	Number of Commuters	% of Commuters
Car, truck, or van -- drove alone	245	77.0%
Car, truck, or van -- carpooled	48	15.1%
Public transportation (including taxicab)	10	3.1%
Worked at home	8	2.5%
Walked	6	1.9%
Bicycle	1	0.3%
Other means	0	0.0%
Motorcycle	0	0.0%
Total	318	100%

Source: US Census Bureau, "Journey to Work: 2000"

2.8 Community Assets

This section outlines the resources, facilities and infrastructure that if damaged could significantly impact public safety and/or the environmental integrity of Johnson City. Johnson City has no police or fire buildings, economic centers, schools, or churches within city limits.

Critical Facilities: Those facilities and infrastructure necessary for emergency response efforts.

- City Hall

Critical Infrastructure: Infrastructure that provides services for the city

- Water lines
- Sewer lines
- Power lines
- Natural gas lines
- Sewer flow station
- Major streets
 - Roots Road
 - SE 81st

Environmental Assets: Environmental assets are those parks, green spaces, wetlands, and rivers that provide an aesthetic and functional service for the community.

- Lake Leona
- Park adjacent to Lake Leona

2.9 Historic & Cultural Resources

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources of tourism dollars. Protecting these resources from the impact of disasters is important. Buildings and sites listed on the National Register of Historic Places contain special significance for national, state, or local history. Currently there are no buildings or sites in Johnson City that are listed on the National Register of Historic Places.

Johnson City is located near many attractions including the Clackamas Town Center Mall and Skating Rink, North Clackamas Aquatic Center and the Top of Scott Golf Course. Recreational options such as Mt. Hood and Timberline Lodge, ski areas, Bonnie Lake State Park, Milo McIver State Park, Molalla River State Park, Mt. Hood National Forest, Mt. Hood Wilderness, Salmon-Huckleberry Wilderness and Bull of the Woods Wilderness are located nearby.^x

2.10 Government Structure

The City of Johnson City has a City Council that consists of five members; a mayor and four councilors. The mayor presides over Council meetings. The mayor and City Council members are elected to four-year terms of office through a general election. The City Council is responsible for identifying problems and needs within the community and then addressing those problems through community goals and objectives. Johnson City has a Planning Commission, which also serves as the Johnson City Involvement Committee. All positions are of a voluntary nonprofessional nature. The city recorder is the only paid city staff member.

2.11 Existing Plans & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.

Johnson City's Natural Hazards Mitigation Plan Addendum includes a range of recommended action items that, when implemented, will reduce the city's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the city's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the plan. Implementing the plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the city's resources. Currently, the city has one plan in place:

Plan: Comprehensive Plan

Date of Last Revision: 1980, Updated 1989

Author/Owner: City of Johnson City

Description: Establishes the city's authority to plan for and deal with issues related to the future development of Johnson City.

Relation to Natural Hazard Mitigation: Provides policy guidelines for future development and land use in the city.

Section 3: Risk Assessment

The following hazards have been addressed in the Clackamas County Natural Hazards Mitigation Plan. The City of Johnson City reviewed the county's plan on June 2, 2009 and assessed how Johnson City's risks vary from the risks facing the entire planning area.

3.1 Flood

The Clackamas County Multi-Jurisdictional Natural Hazards Mitigation Plan's description of the causes and characteristics, history, and general impacts of the flooding hazard apply to Johnson City. Descriptions of the flood hazard can be found on pages 6-1 to 6-22 of the 2002 Clackamas County Natural Hazards Mitigation Plan and pages 25 to 29 of the 2007 update.

The worst flood on record for Johnson City occurred as a result of the December 2008 winter storm and subsequent rainfall on January 1-2, 2009. Kellogg Creek, located just west of city limits spilled over its banks and caused a deluge of water to hit the northwest corner of the city. Homes in Johnson City are elevated at least two feet so no homes were damaged, but streets were flooded and cars could not drive through this part of the city. Flood waters came up to the base of the laundry room on SE 79th Street but did not enter the building. JMP, Inc management used to regularly clear debris from Kellogg Creek, which is under county jurisdiction, but Clackamas County Water Environment Services forced Johnson City to cease debris removal because it is a protected waterway. The HMTF committee believes Kellogg Creek overflowed its banks because the catch basin was filled with debris and could not drain properly.





The extent of flooding hazards in Johnson City primarily depends on climate and precipitation levels. In the past, flooding has occurred on the northwestern border of the city at SE 79th Street. In particularly large events the flood waters typically continue east towards SE Lupine Street. Lake Leona has never flooded, as it would require over two feet of additional water before the banks of the lake would be breached.

The geographic location of the flooding hazard was determined using the designated FEMA NFIP 100-year floodplain data. The FEMA 100-year Flood Plain Map on page 21 below shows the FEMA mapped floodplain stops just west of city limits. This is because Kellogg Creek plunges underground just before it reaches Johnson City. The creek runs beneath Johnson City, enters into Lake Leona (outlined on the map) and continues underground past city limits.

The HMTF estimates the probability of future flooding events in Johnson City is 'high,' meaning one event is likely to occur within a 10 to 35 year period. The HMTF estimates the city's vulnerability to flooding events is 'moderate' meaning between 1% and 10% of the city's population and/or assets could be affected in a major flood event. Both estimates are in agreement with the county's probability and vulnerability ratings.

Johnson City works to minimize urban flood issues within the city. Each year catch basins that drain into Lake Leona have been cleared of debris. Currently Johnson City is not a participant in the National Flood Insurance Program. The city's most current effective Flood Insurance Rate Map (FIRM) date is June 17th, 2008 (initial FHBM 8/06/1976). All of Johnson City is located in zones C and X, meaning the city is outside of the 100 year flood zone. Based on the December 2008 / January 2009 flood event, however, the city may want to re-evaluate its flood risk. If debris from Kellogg Creek can no longer be removed, the city's flood risk may increase over time. Currently, however, the FIRM shows no base flood elevations or depths, and purchase of flood insurance is not required of residents. The city has had zero recorded losses, and zero recorded repetitive flood losses.

City of Johnson City FEMA 100 Year Flood Plain

-  Flood Plain
-  Creeks, Streams, and Ponds
-  Major Arterial
-  Private Roads
-  Johnson City Limits



Scale: 1 inch is equal to 300 feet



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3.2 Landslide

The Clackamas County Multi-Jurisdictional Natural Hazards Mitigation Plan adequately describes the causes and characteristics, history, extent and impacts of landslides in the region and descriptions are applicable to Johnson City. Descriptions of the landslide hazard can be found on pages 7-1 to 7-13 of the 2002 Clackamas County Natural Hazards Mitigation Plan and pages 33 to 39 of the 2007 update.

Johnson City does not have a history of landslides. This is due the city's relatively flat terrain. The Comprehensive Plan states that slopes range from 1:100 to 1:10, or 1% grade to 10% grade. The 10% grade area is along the northern banks of Lake Leona between 81st Street and 83rd Street. An RV lot and a few homes are located near this slope.

The HMTF estimates the probability of future landslide events is 'low,' meaning one event is likely to occur within a 75 to 100 year period. This estimate is lower than the county's 'high' probability estimate because the city has no history of landslides, level terrain, and very few areas at risk to landslides. The HMTF estimates a 'low' vulnerability to landslides, meaning less than 1% of population and/or assets could be affected by a landslide event. This is in agreement with the county's 'low' vulnerability ranking.

If a landslide were to occur it could impact water, gas and power lines. To help minimize the risk of landslides Johnson City maintains vegetation coverage on the slope and encourages planting of native species.

3.3 Wildfire

The Clackamas County Multi-Jurisdictional Natural Hazards Mitigation Plan adequately describes the causes and characteristics, location, extent and impacts of the wildfire hazard in Johnson City. Descriptions of the wildfire hazard can be found on pages 8-1 to 8-16 of the 2002 Clackamas County plan. The Clackamas County Community Wildfire Protection Plan details a limited history of wildfire in the county. In 1951 approximately 2,000 acres burned in Clackamas and Multnomah Counties. In 2001 lightning strikes started eight fires in eastern Clackamas County on US Forestry Service lands, burning about 80 acres. In 2002 the Bowl Fire burned over 300 acres just east of Estacada, located approximately 14 miles southeast of Johnson City.^{xi}

Clackamas County has two major physiographic regions: the Willamette River Valley in western Clackamas County and the Cascade Range Mountains in eastern and southern Clackamas County. The Willamette River Valley, which includes Johnson City, is the most heavily populated portion of the county and is characterized by flat or gently hilly topography. The Cascade Range has a relatively small population and is characterized by heavily forested slopes. Eastern Clackamas County is at higher risk to wildfire than western portions of the county due to its dense forest land. Human caused fires are responsible for the majority of fires in Clackamas County.

The only area within Johnson City that has dense vegetation coverage is the slope between SE 81st and SE 83rd streets. A fire in this area could impact three homes. Just outside the eastern city border lies another area of dense vegetation, as indicated by the Relative Wildfire Hazards Map on page 24 below.

The HMTF estimates the probability of future wildfire events is ‘moderate,’ meaning one event is likely within a 35 to 75 year period. The HMTF additionally estimates that the city has a ‘moderate’ vulnerability to wildfire hazards, meaning between 1% and 10% of the population or community assets could be affected by a major wildfire event. Both rankings are in agreement with the county’s ‘moderate’ ratings.


Johnson City employs a number of mitigation strategies to reduce the city’s risk to wildfires. Ordinance 33 prohibits the use of fireworks within city limits. Johnson Mobile Park, Inc. rules and regulations require residents to maintain yards. Additionally, JMP requires homes to have visible house numbers for easy identification for emergency responders. Clackamas Fire District #1, the fire protection authority for the city, stays current on issues by participating in the Clackamas County Fire Prevention Cooperative, a group consisting of the fire districts within the county. The district also contributed in creating the Clackamas County Community Wildfire Protection Plan and will participate in future plan updates.




Public outreach is a primary mitigation tool used by Clackamas Fire District #1. The fire district has a fire prevention division dedicated to protecting and preserving life and property through education, engineering, and enforcement. The fire prevention division offers numerous education opportunities including school programs, public presentations, media events, and safety fairs. They review pre-construction plans and develop fire codes. Additionally this division inspects buildings for fire code compliance and offers juvenile fire setter counseling and follow-up.

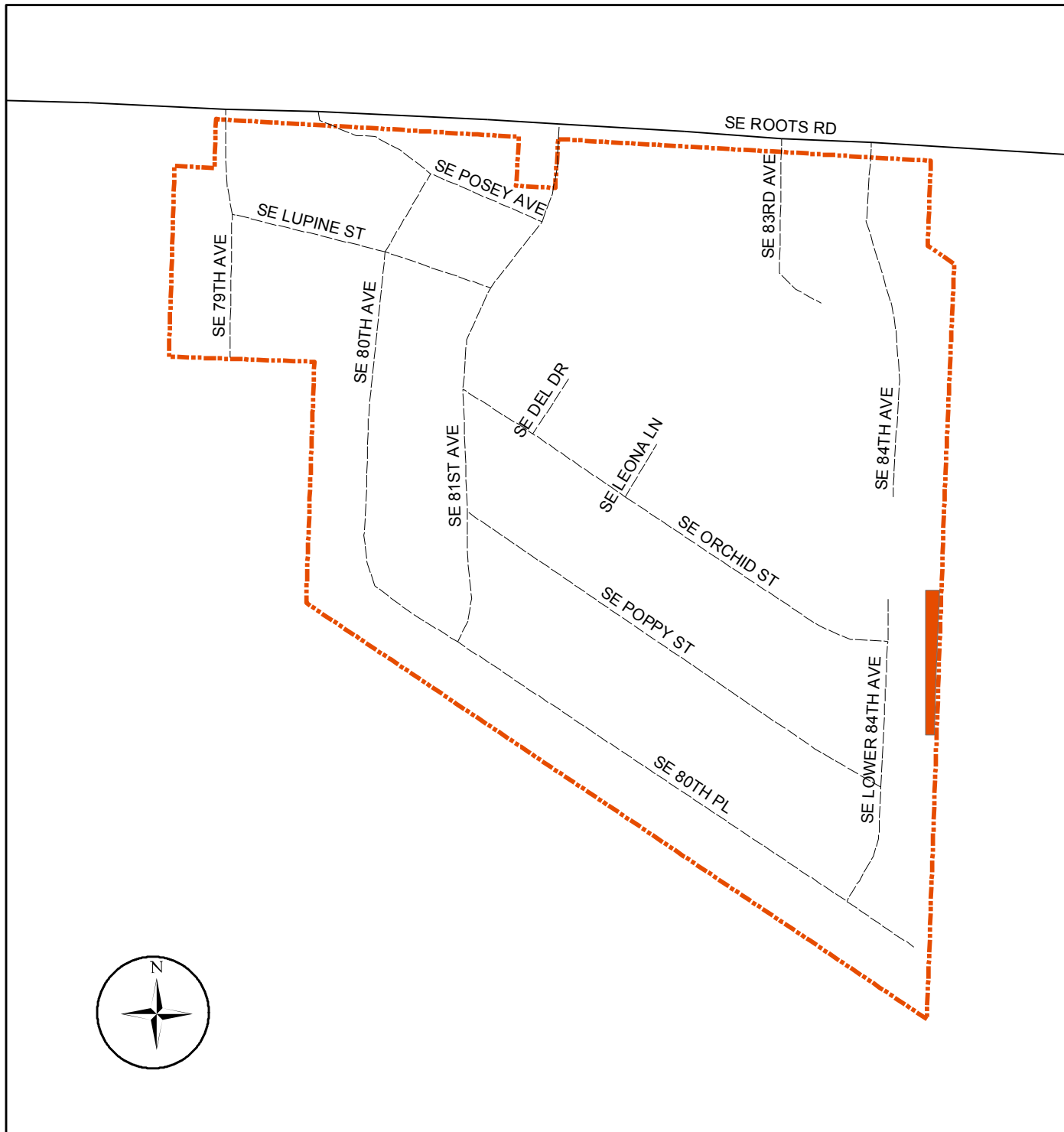
City of Johnson City Relative Wildfire Hazards

Relative Hazard

-  HIGH
-  MODERATE

 Johnson City Limits

-  Major Arterial
-  Local
-  Private Roads



Scale: 1 inch is equal to 300 feet



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3.4 Severe Storms: Wind and Winter

The Clackamas County Multi-Jurisdictional Natural Hazards Mitigation Plan adequately describes the causes and characteristics, location, extent and impacts of the severe storm hazard in the City of Johnson City. Additionally, the historical severe storm events up to September 2007 have also been described in the county plan, and are applicable to Johnson City. As such, a description of these events will not be repeated here but three events require further explanation:

- The Columbus Day windstorm of October 1962 toppled a few fir trees onto homes, causing major damages to those homes.
- The December 1995 windstorm blew a dead tree on SE 84th Avenue onto a pickup truck, totaling the truck.
- From December 26, 2008 to January 2, 2009 Clackamas County was hit with the worst winter storm event in over 40 years. A few awnings were damaged because many of the mobile homes are not designed to have that kind of snow load on the roof.

Additional severe storm information can be found on pages 9-1 to 10-7 of the 2002 Clackamas County Natural Hazards Mitigation Plan, and pages 46 to 50 in the 2007 plan update.

The HMTF estimates the probability of future winter storm events is ‘high,’ meaning one incident is likely within a 10 to 35 year period. In general, winter storms are worse than windstorms in Johnson City. A number of elderly citizens live in Johnson City and snowy conditions make it difficult to travel out of their homes. In winter storms traffic accumulates at the northwest exit on SE 79th Avenue because it is flatter than the SE 81st Avenue exit. Heavy snow loads can damage roofs and awnings. Driveways in Johnson City are located every 30 to 40 feet, so plowing the streets creates snow berms and inhibits access to homes. For this reason it is best to allow snow to melt where it falls rather than plow it to the sides of streets. The HMFT estimates the city’s vulnerability to winter storms as moderate, meaning between 1% and 10% of population or assets are affected in major events. Both the probability and vulnerability rankings for winter storms are in agreement with the county’s rankings.

Windstorms are less of a threat in Johnson City. The HMTF estimates the probability for future wind storm events is ‘moderate,’ meaning one incident is likely within a 35 to 75 year period. Vulnerability is estimated at ‘low,’ meaning less than 1% of population or assets are affected in major events. Both rankings are in agreement with the county’s rankings. Additionally, homes in Johnson City (and Clackamas County) are not required to be tied down, and the biggest problem associated with wind storms is damage to awnings.

Mitigating severe storms can be difficult because storms affect all areas of the city, but Johnson City has taken proactive steps in reducing severe storm hazards. Approximately two-thirds of telephone and power lines are underground, and all water, sewer and gas lines are underground, making them less vulnerable in severe storm events. Very few

trees threaten Johnson City because JMP management quickly responds to citizen complaints about dangerous trees and cuts them down or requires homeowners to trim them back. Additionally, vegetation on home lots is evaluated before new tenants move in.

3.5 Earthquake

Clackamas County's Natural Hazards Mitigation Plan adequately describes the causes and characteristics of earthquake hazards for the region. Likewise, the county's plan adequately documents past earthquake occurrences. Historical records count over 56 earthquakes in the Portland area. The more severe ones occurred in 1877, 1880, 1953 and 1962. The most recent severe earthquake was the March 25, 1993 Scotts Mills quake. It was a 5.6 magnitude quake with aftershocks continuing at least through April 8. Descriptions of the earthquake hazard can be found on pages 11-1 to 11-20 in the 2002 Clackamas County Natural Hazards Mitigation Plan, and pages 53 to 58 in the 2007 plan update.

Within the Northern Willamette Valley/Portland Metro Region, three potential faults and/or zones are capable of generating high-magnitude earthquakes. These include the Portland Hills Fault Zone, Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone.

- Portland Hills Fault Zone
The Portland Hills Fault Zone is a series of NW-trending faults that vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years ago) sediment.^{xii} The fault zone extends along the eastern margin of the Portland Hills for a distance of 25 miles.
- Gales Creek-Newberg-Mount Angel Structural Zone
The Gales Creek-Newberg-Mount Angel Structural Zone is a 50-mile-long zone of discontinuous, NW trending faults. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic reflectors in the overlying basin sediment.^{xiii}
- Cascadia Subduction Zone
The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year.^{xiv} Scientists have recently found evidence that 11 large, tsunami-producing earthquakes have occurred off the Pacific Northwest coast in the past 6,000 years. These earthquakes took place roughly between 300 and 5,400 years ago with an average occurrence interval of about 510 years. The most recent of these large earthquakes took place in approximately 1700 A.D.^{xv} Paleoseismic studies along the Oregon coast indicate that the state has experienced seven Cascadia Subduction Zone (CSZ) events possibly as large as M9 in the last 3,500 years. These events are estimated to have an average recurrence interval between 500

and 600 years, although the time interval between individual events ranges from 150 to 1000 years.

The maps on pages 28-30 indicate Johnson City has few areas of high earthquake hazard. The entire city has moderate soil amplification and most of the city has very low to low soil liquefaction. The relative earthquake hazards map (page 30) shows a small portion of the city in the 'higher' hazard zone where Lake Leona is located. This 'higher' hazard zone mirrors the moderate and high soil liquefaction zones.




Even though the hazard maps indicate Johnson City is at a lower risk to earthquakes than many other cities in Clackamas County, earthquakes are the biggest threat to Johnson City. A number of homes are elevated on blocks or situated on dirt and these homes could be shook off their foundations in earthquake events, especially because they are not required to be tied down. Homes in Johnson City are designed to withstand earthquakes and should not collapse, but they could be damaged beyond repair. While this reduces the risk of life loss, the financial burden would be great for many families. Additionally, some utility lines run underneath homes and a broken utility line would be difficult to access for repairs.


Johnson City has taken mitigation steps to reduce the city's vulnerability in earthquake events. City Hall is situated on a concrete foundation strap so it should not move off its foundation and will continue to be habitable after a large quake. The old water tower is disconnected from the water lines that feed into the main system. If it is damaged it will not disrupt the main water supply.



The HMTF ranks both the probability of future earthquake events and vulnerability as 'high,' meaning one event is likely within a 10 to 35 year period and more than 10% of population and assets would be affected in a major event. Both estimates are in agreement with the county's 'high' ratings. Since Clackamas County's Natural Hazards Mitigation Plan was updated in 2007, better earthquake probability estimates have surfaced. Scientists now estimate that the chance in the next 50 years of a great subduction zone earthquake is between 10 and 20 percent assuming that the recurrence is on the order of 400 ± 200 years.^{xvi} Crustal and deep intraplate earthquakes remain difficult to predict.

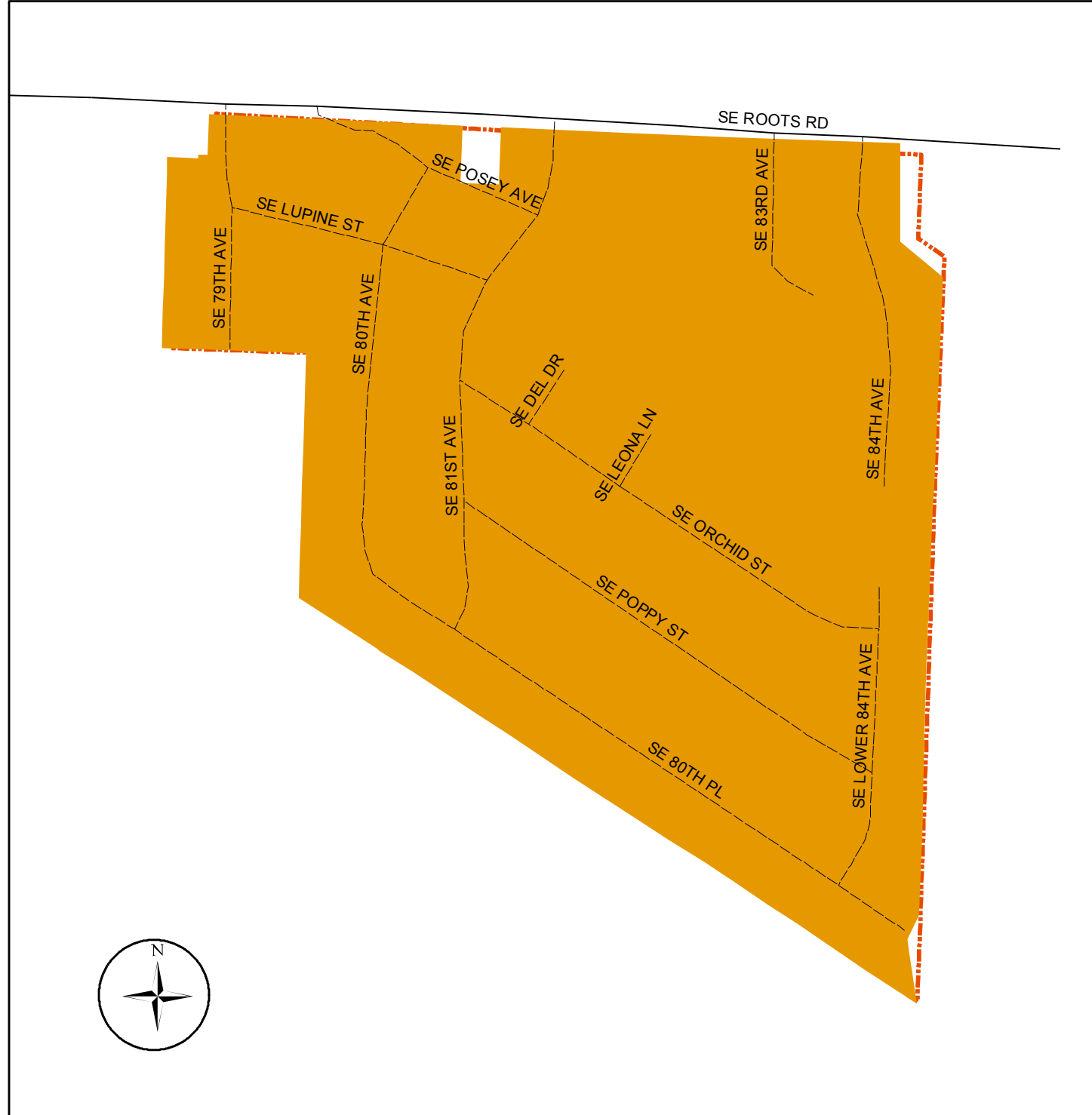
City of Johnson City Soil Amplification

Soil Amplification

-  LOW
-  MODERATE
-  HIGH

 Johnson City Limits

-  Major Arterial
-  Private Roads



Scale: 1 inch is equal to 300 feet







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City of Johnson City Soil Liquefaction

Soil Liquefaction

-  NONE/VERY_LOW
-  LOW
-  MODERATE
-  HIGH

 Johnson City Limits

-  Major Arterial
-  Local
-  Private Roads

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City of Johnson City Relative Earthquake Hazards




Relative Hazards

 Slight


 Lower


 Moderate

 Higher

 Johnson City Limits

 Major Arterial

 Local

 Private Roads

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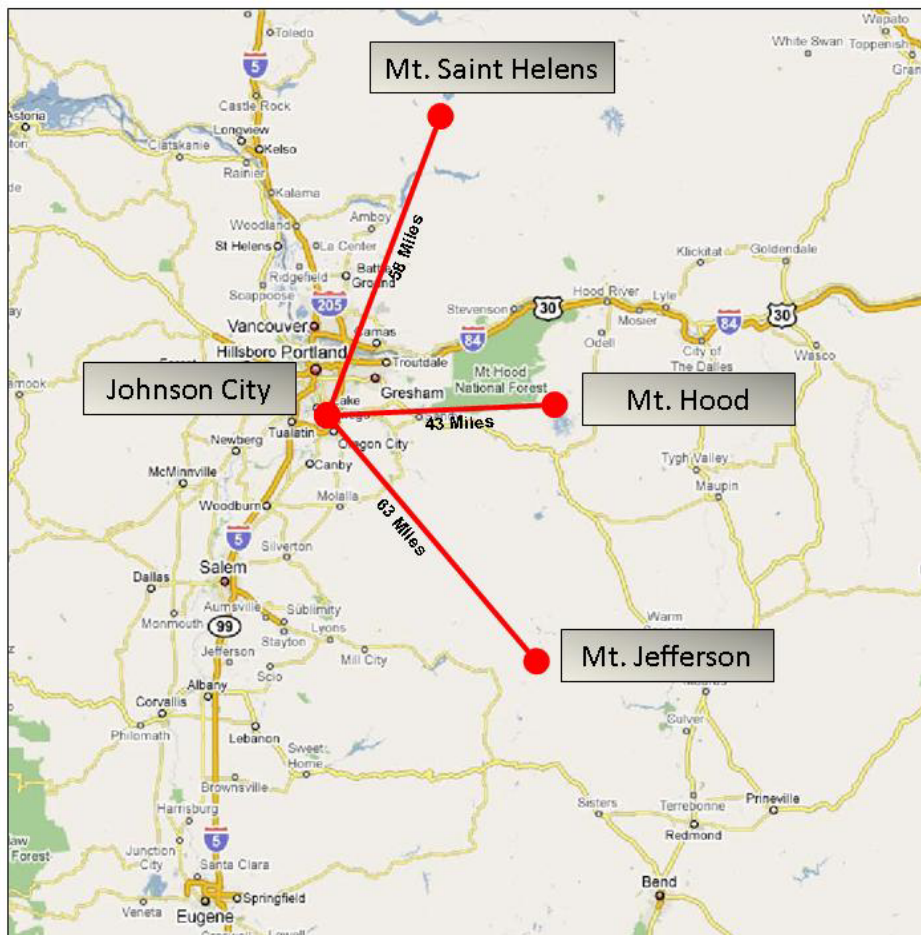
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3.6 Volcano

The Clackamas County Multi-Jurisdictional Natural Hazards Mitigation Plan adequately describes the causes, characteristics, history, location, extent, and potential vulnerability / impacts of volcanic eruptions affecting Johnson City. Descriptions of the volcano hazard can be found on pages 12-1 to 12-13 of the 2002 Clackamas County Natural Hazards Mitigation Plan and pages 61 to 64 of the 2007 plan update.

Immediate danger areas for volcanic eruptions lie within a 20-mile radius of the blast site, and ashfall is likely to affect communities downwind of the eruption. Several volcanoes are located near Johnson City, the closest of which are shown in Figure 3 below. Additionally, Mount Adams is located north of Mount Hood; Mount Rainier is located north of Mount Saint Helens; and the Three Sisters lie to the south of Mount Jefferson.

Figure 3. Volcano Locations in Relation to the City of Johnson City



Due to Johnson City’s relative distance from volcanoes, the city is unlikely to experience the immediate effects that eruptions have on surrounding areas (i.e., mud and debris flows, or lahars). Depending on wind patterns and which volcano erupts, however, the city may experience ashfall. The eruption of Mount St. Helens in 1980, for example,

coated the Willamette Valley with a fine layer of ash. If Mount Hood erupts, however, the city is likely to be fully coated in ash.

Clackamas County estimates a low probability that volcanic eruptions will occur in the future, and a high vulnerability to volcanic events. Both ratings are true for the city of Johnson City as well. Hazards related to volcanic eruptions (i.e., potential community impacts) are adequately described in the Clackamas County Natural Hazards Mitigation Plan. Although Johnson City is unlikely to experience lahars or lava flows, tephra (sand-sized or finer particles of volcanic rock that is ejected rapidly into the air from volcanic vents) drifts downwind from the explosions and can form a blanket-like deposit of ash. Tephra is a public health threat, and can damage agriculture and transportation systems (i.e., aircraft and on-the-ground vehicles). Tephra can also clog drainage systems and create major debris management problems. Within Johnson City public health would be a primary concern, and keeping transportation routes open/accessible would be important as well.

Section 4: Action Items

4.1 Action Items

Short and long-term action items identified through the planning process are an important part of the mitigation plan. Action items are detailed recommendations for activities that local departments, citizens and others could engage in to reduce risk. Each action item has a corresponding action item worksheet describing the activity, the project's rationale, potential ideas for implementation, and coordinating / partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. Full action item worksheets are located in Appendix B of this addendum.

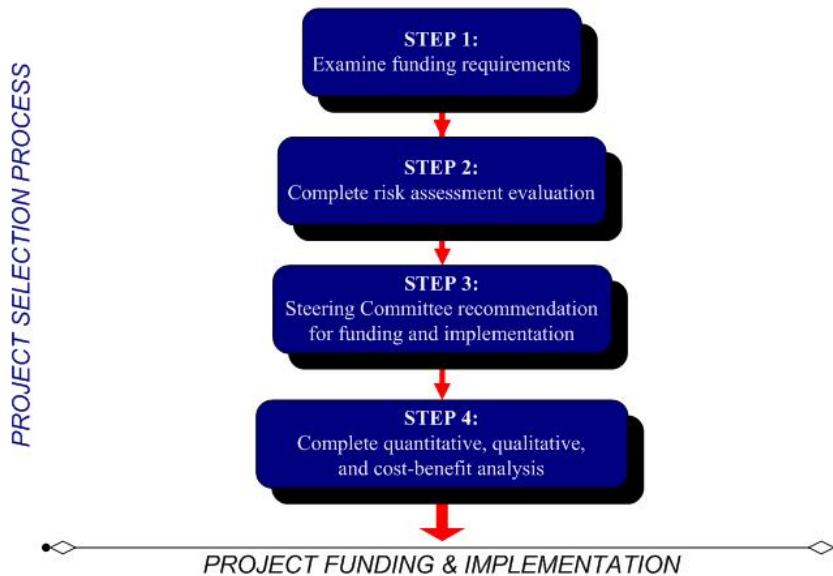
- MH #1: Develop public education programs to inform the public about methods for mitigating the impacts of natural hazards.
- MH #2: Integrate the goals and action items from the Natural Hazards Mitigation Plan into existing regulatory documents and programs, where appropriate.
- MH #3: Identify and pursue funding opportunities to develop and implement hazard mitigation activities.
- MH #4: Continue to update and improve hazard assessments in the Natural Hazards Mitigation Plan as new information becomes available.
- MH #5: Maintain records of the locations of all underground utility lines.
- FL #1: Explore participation in the National Flood Insurance Program (NFIP).
- FL #2: Coordinate with Clackamas County to keep Kellogg Creek clear of debris.
- EQ #1: Encourage structural and non-structural mitigation projects.

Note: the City of Johnson City does not believe that implementing landslide, severe storm and volcano-related mitigation activities will be cost-effective at this time. As such, the city has not identified landslide, severe storm, or volcanic-eruption mitigation action items. Johnson City will partner with Clackamas County, however, on the implementation of mitigation strategies that benefit both jurisdictions.

4.2 Project Prioritization Process

The Disaster Mitigation Act of 2000 (via the Pre-Disaster Mitigation Program) requires that jurisdictions identify a process for prioritizing potential actions. Potential mitigation activities often come from a variety of sources; therefore the project prioritization process needs to be flexible. Projects may be identified by committee members, local government staff, other planning documents, or the risk assessment. Figure 4 illustrates the project prioritization process.

Figure 4: Project Prioritization Process
Action Item and Project Review Process



Source: Community Service Center's Partnership for Disaster Resilience at the University of Oregon, 2008.

Step 1: Examine funding requirements

The first step in prioritizing the plan's action items is to determine which funding sources are open for application. Several funding sources may be appropriate for the city's proposed mitigation projects. Examples of mitigation funding sources include but are not limited to: FEMA's Pre-Disaster Mitigation competitive grant program (PDM), Flood Mitigation Assistance (FMA) program, Hazard Mitigation Grant Program (HMGP), National Fire Plan (NFP), Community Development Block Grants (CDBG), local general funds, and private foundations, among others.

Because grant programs open and close on differing schedules, the HMTF will examine upcoming funding streams' requirements to determine which mitigation activities would be eligible. The HMTF may consult with the funding entity, Oregon Emergency Management, or other appropriate state or regional organizations about project eligibility requirements. This examination of funding sources and requirements will happen during the HMTF's semi-annual plan maintenance meetings.

Step 2: Complete risk assessment evaluation

The second step in prioritizing the plan's action items is to examine which hazards the selected actions are associated with and where these hazards rank in terms of community risk. The HMTF will determine whether or not the plan's risk assessment supports the implementation of eligible mitigation activities. This determination will be based on the location of the potential activities, their proximity to known hazard areas, and whether community assets are at risk. The HMTF will additionally consider whether the selected

actions mitigate hazards that are likely to occur in the future, or are likely to result in severe / catastrophic damages.

Step 3: Committee Recommendation

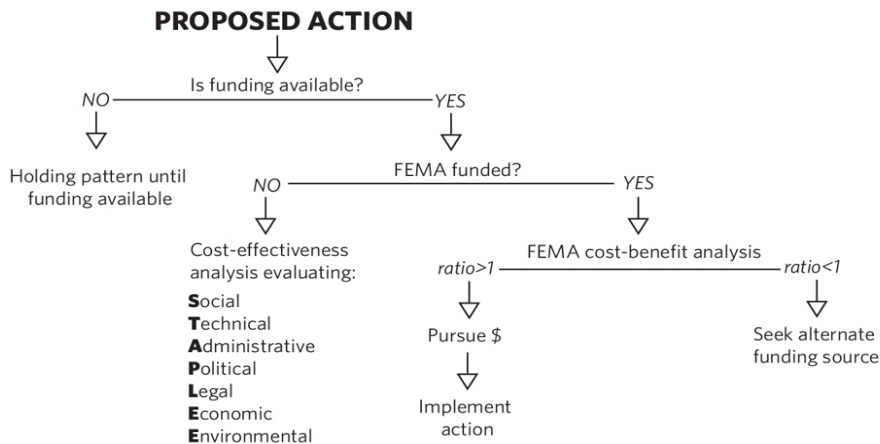
Based on the steps above, the HMTF will recommend which mitigation activities should be moved forward. If the HMTF decides to move forward with an action, the coordinating organization designated on the action item form will be responsible for taking further action and, if applicable, documenting success upon project completion. The HMTF will convene a meeting to review the issues surrounding grant applications and to share knowledge and/or resources. This process will afford greater coordination and less competition for limited funds.

The HMTF and the community's leadership have the option to implement any of the action items at any time, (regardless of the prioritized order). This allows the HMTF to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. This methodology is used by the HMTF to prioritize the addendum's action items during the annual review and update process.

Step 4: Complete quantitative and qualitative assessment, and economic analysis

The fourth step is to identify the costs and benefits associated with the selected natural hazard mitigation strategies, measures or projects. Two categories of analysis that are used in this step are: (1) benefit/cost analysis, and (2) cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity assists in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards provides decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. Figure 5 shows decision criteria for selecting the appropriate method of analysis.

Figure 5: Benefit Cost Decision Criteria



Source: Community Service Center's Partnership for Disaster Resilience at the University of Oregon, 2006.

If the activity requires federal funding for a structural project, the HMTF will use a Federal Emergency Management Agency-approved cost-benefit analysis tool to evaluate the appropriateness of the activity. A project must have a benefit/cost ratio of greater than one in order to be eligible for FEMA grant funding.

For non-federally funded or nonstructural projects, a qualitative assessment will be completed to determine the project's cost effectiveness. The HMT will use a multivariable assessment technique called STAPLE/E to prioritize these actions. STAPLE/E stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Assessing projects based upon these seven variables can help define a project's qualitative cost effectiveness.

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- ⁱ USGS - Partnership for Disaster Resilience Research Collaborative, 2006.
- ⁱⁱ National Institute of Building Science's Multi-hazard Mitigation Council. "Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities" 2005.
- ⁱⁱⁱ USGS - Partnership for Disaster Resilience Research Collaborative, 2006.
- ^{iv} Johnson City Comprehensive Plan, 1989.
- ^v <http://info.econ.state.or.us:591/FMPro?-db=Community.fp4&-Format=forms.htm&-lay=webpage&-op=eq&sort%20name=Johnson%20City&-script=hit%20count&-Find>
- ^{vi} Portland State University Population Research Center, "Certified 2000-2008 Population Estimates," <http://www.pdx.edu/prc/annualorpopulation.html>, June 30, 2009.
- ^{vii} US Census, "Population by Race: 2000," Fact Sheet, Happy Valley, OR, www.census.gov.
- ^{viii} US Census, "Population by Age: 2000," Fact Sheet, Happy Valley, OR, www.census.gov.
- ^{ix} US Census, "Disabled Population: 2000," Fact Sheet, Happy Valley, OR, www.census.gov.
- ^x <http://www.oregoncities.us/johnsoncity/index.htm>
- ^{xi} Clackamas County Community Wildfire Protection Plan, 2005. Page 16-18.
- ^{xii} Madin, Ian, 1990. *Earthquake-hazard geology maps of the Portland metropolitan area, Oregon; text and map explanation: Portland, OR*. Oregon Department of Geology and Mineral Industries.
- ^{xiii} Yeats, R.S., Graven, E.P., Werner, K.S., Goldfinger, C., and Popowski, T., 1996. *Tectonics of the Willamette Valley, Oregon*. U.S. Geological Survey Professional Paper 1560
- ^{xiv} Goldfinger, C., L. D. Kulm, R. S. Yeats, C. Hummon, G. J. Huftile, A. R. Niem, C. G. Fox, and L. C. McNeill, 1996. *Oblique strike-slip faulting of the Cascadia submarine forearc: the Daisy Bank fault zone off central Oregon*, in Subduction Top to Bottom, G. E. Bebout, D. Scholl, S. Kirby and J. P. Platt (Editors), American Geophysical Monograph 96, 65-74.
- ^{xv} The Cascadia Region Earthquake Workgroup, 2005. *Cascadia Subduction Zone Earthquakes: A magnitude 9.0 earthquake scenario*. <http://www.crew.org/PDFs/CREWSubductionZoneSmall.pdf>
- ^{xvi} NOAA, 1993. Tsunamis affecting the West Coast of the United States: 1806-1992.

Appendix A: Planning and Public Process

The following appendix documents Johnson City's natural hazards mitigation planning and public involvement processes.

Work Sessions

Intro Hazard Mitigation Meeting Minutes (May 5, 2009)	A2
Intro Hazard Mitigation Meeting Sign-In.....	A7
Hazard Mitigation Meeting 1 Minutes (June 2, 2009)	A8
Hazard Mitigation Meeting 1 Sign-In	A12
Hazard Mitigation Meeting 2 Minutes (June 23, 2009)	A13
Hazard Mitigation Meeting 2 Sign-In	A16

Public Outreach

Johnson City News Article	A17
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MINUTES

Meeting: Johnson City Natural Hazards Mitigation Plan Intro Meeting

Date: May 5, 2009

Time: 7:00 to 8:30pm

Location: Johnson City City Hall

1. Attendees

- a. Kay Mordock, Johnson City Mayor
- b. Bill Mordock, Johnson City Planning Commission
- c. Judy Davis, Johnson City Recorder
- d. Brian Johnson, Johnson Mobile Estates CEO
- e. Kevin Donegan, Clackamas Fire District #1 Emergency Manager

2. Natural Hazards Mitigation Plan Overview

- a. The group reviewed the handouts that explain natural hazards mitigation plans, the disaster cycle, and the “understanding risk” Venn diagram
(*See handouts below*)

3. Planning Process

First Planning Meeting:

During this meeting we will:

- Adopt Plan Mission Statement, Goals, and Objectives
 - We will adopt the Clackamas County Goals and Mission Statement unless the group wants to add to it.
- Determine who will be the Coordinating Body
 - This is the group who will implement the action items in the plan.
- Determine who will be the Convener
 - This is the person who will call the coordinating body together, facilitate meetings, create agendas, etc or designate someone to do these tasks
- Review hazard data and history and get feedback
 - Laurel will research hazard history and email to the group before the next meeting. Between now and the next meeting everyone should be thinking about past natural hazards events.
- Discuss community issues related to each hazard
 - What happened when the hazard hit? Where did the hazard hit? Who was affected? By answering these questions the group will identify vulnerabilities in the community.
- Review next steps – action item updates
 - The action items will be created based on the vulnerabilities identified. The goal of creating a mitigation plan is to reduce the vulnerabilities within a community, and action items are specific projects/programs/etc that a community can do to build resiliency. Laurel will create a list of potential action items, but the group should also be thinking of specific projects to put in the plan.

Second Planning Meeting:

During this meeting we will discuss the following:

- Create mitigation action items
 - The reason we make natural hazards mitigation plans is to create action items that address each of the vulnerabilities. Laurel will create a list of suggested action items and the group will review and add action items as needed.

- Discuss the formal review process and plan maintenance
 - We will come up with a schedule of meetings and tasks so the plan can be implemented.
- Discuss public involvement
 - Once we have a final draft of the plan we will need to advertise it to the public and allow time for comments.
- Review timeline for city review, OPDR review, FEMA review
 - Once Laurel finishes her draft she will email it to the committee for editing. The Oregon Partnership for Disaster Resilience will also review the plan and then send it off to FEMA for preliminary review.
- Review process for adoption
 - The City Council will need to adopt the plan after FEMA gives preliminary approval.

4. Needs from you

- Maps – GIS department participation
 - Laurel will ask Cindy how she was able to get the maps created for free in 2003. The 2003 maps could still be applicable for the new plan.
- Access to existing plans/policies
 - Brian will give a copy of the comprehensive plan to Laurel
- List of critical facilities, infrastructures, populations
- Hazard history facts/statistics
 - The group should be thinking of the impacts of past natural disasters on the city to prepare for the next meeting. Any numbers you have (# of damaged homes, costs to repair, etc) would be very beneficial.
- Most recent employment and economics data
- Land use and development information
- Existing mitigation projects, education, etc

5. Review Community History and Community Assets

- a. The group added the sewer flow station to the list of critical infrastructure
- b. The water tower was removed from the list of cultural/historical assets
- c. The playground was removed from environmental assets

6. Review existing Community Profile

- a. The group read over excerpts from the community profile created in 2003 to check for accuracy and changes in information.
- b. JME, Inc. was changed to JMP, Inc (Johnson Mobile Park)
- c. There are fewer than 281 units, more like 279 units now
- d. “Units” was changed to read “homes”
- e. JMP operates the sewers, not the city
- f. The old well shed was removed
- g. The playground was removed
- h. Johnson City is located near the intersection of Highway 224 and 212
- i. The “main section” of town refers to the area with a majority of homes
- j. The main section of town is accessible by 2 roads, not three
- k. Park developers did not dam Kellogg Creek to create Lake Leona
- l. Blue heron are also seen around Lake Leona

7. Next meeting: June 2, 2009 at 6:00

HANDOUT

What is ‘natural hazards mitigation’?

Natural hazards mitigation is defined as permanently reducing or alleviating the losses of life, property and injuries resulting from natural hazards through long and short-term strategies.

Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

Why develop a natural hazards mitigation plan?

A natural hazards mitigation plan provides a community with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. The process of developing a mitigation plan can also forge new partnerships among community organizations, businesses, and local citizens. These partnerships can lead to the development and implementation of risk reduction strategies that assist the community in reducing losses from any future natural disaster events.

In 2000, Congress approved the Disaster Mitigation Act of 2000 (DMA2K). DMA2K set forth requirements for communities to develop and adopt local natural hazard mitigation plans to become eligible for mitigation grant funding, including FEMA’s Hazard Mitigation Grant Program (HMGP), and Pre-Disaster Mitigation (PDM) Grant Program.

What does a mitigation plan do?

Natural hazards mitigation plans document knowledge about the problems associated with natural hazards in a community. A mitigation plan articulates goals that will guide the community in implementing short- and long-term risk reduction activities, recommending appropriate mitigation action items, and identifying resources to implement activities. Preparing a mitigation plan for your community can reduce public and private costs resulting from natural disaster events. Successes in risk reduction and loss prevention are achieved by implementing programs that address and mitigate the potential impacts natural disasters may have on society, the economy, and the environment.

How will the county help with this process?

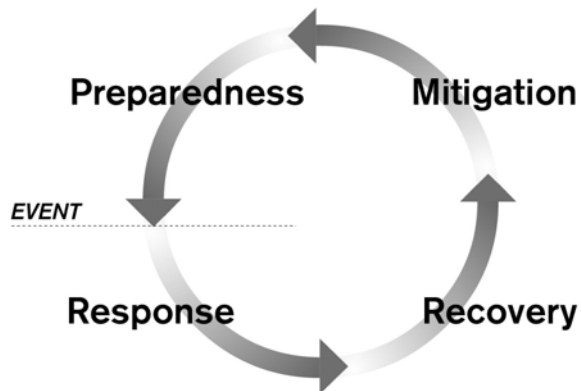
In an effort to assist each city in their addendum development process, Clackamas County partnered with the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon to hire a Resource Assistance for Rural Environments Participant (RARE Participant). The RARE Participant was hired using funds made available through the Hazard Mitigation Grant Program, and she will work with each participating city in developing an addendum to Clackamas County’s Natural Hazards Mitigation Plan. The planning processes will occur between February and August 2009.

The RARE Participant will be responsible for developing and facilitating all natural hazards mitigation plan meetings within each city. Likewise, the RARE Participant will be responsible for documenting the results of each meeting, and preparing a draft addendum for all cities involved.

The Disaster Cycle

The emergency management profession and FEMA have used the concept of the disaster cycle (Figure 1-1) to describe the phases of a disaster. Although described as separate phases, each phase is tied to the others. It is helpful to think of the disaster cycle as a simple equation. Every risk or vulnerability we mitigate today reduces our overall exposure whereby decreasing the pressure on the response side of the disaster cycle and lowering our recovery costs from future events. This section defines the four phases and describes plans and activities associated with them. The four phases, Response, Recovery, Preparedness, and Mitigation can be described as follows:

Figure 1-1: The Disaster Cycle



Response

Response begins as soon as a disaster event occurs. Response is the provision of search and rescue, medical services, and access control as well as repairing and restoring communication and data systems during a crisis. A coordinated response plan can help reduce casualties, damage, and decrease recovery time. Examples include emergency operations plans and business continuity plans and established networks of first responders.

Recovery

Recovery operations provide for basic needs and restore the community. There are two components in the recovery phase. During the first phase, infrastructure is examined, and repairs are conducted to restore water, power, communication and other utilities. The second phase includes returning to normal functions and addressing future disasters. The process of recovery can take months or possibility years to accomplish depending upon the event. An example would be the development of a post-disaster recovery plan.

Preparedness

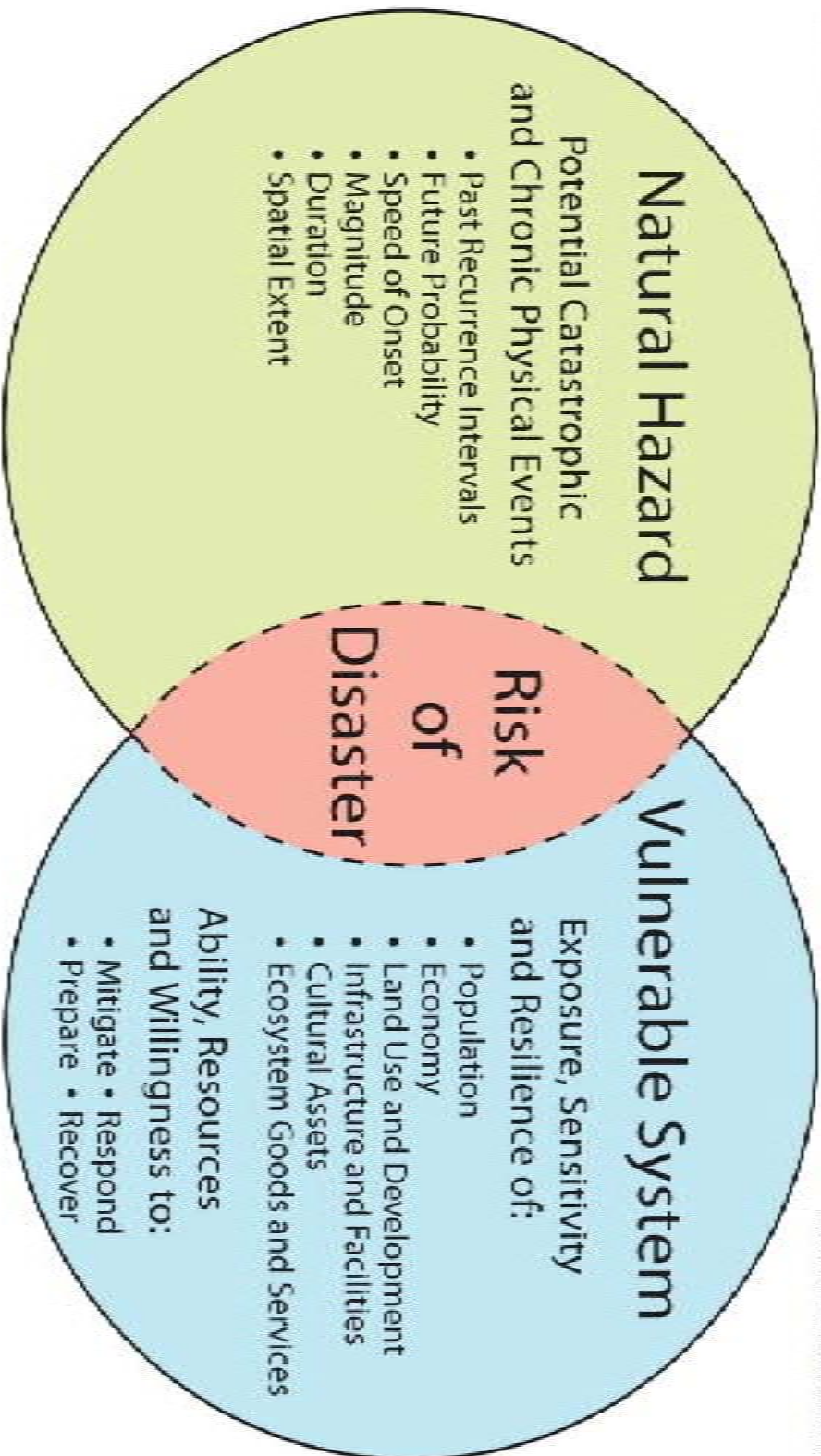
Preparedness refers to activities, programs, and systems developed in advance of a disaster designed to build and enhance capabilities at an individual, business, community, state and federal level to support the response to and recovery from disasters. Example strategies might include developing awareness and outreach campaigns and training targeted to individuals and businesses on personal and professional responsibility to be self sufficient for at least 72 hours post-disaster.

Mitigation or Risk Reduction

Mitigation is the act of reducing or eliminating future loss of life and/or property, and/or injuries resulting from hazards through short and long-term activities. Mitigation strategies may range in scope and size; however, no matter the size, effective mitigation activities have the potential to reduce the vulnerability and/or exposure to risk and impact of disasters. Example mitigation activities for flooding include acquiring, elevating, or relocating structures; for seismic include building code, retrofitting buildings or infrastructure and non-structurally retrofitting labs and offices; and for wind or winter storms include under grounding power lines and tree replacement programs.



Understanding Risk



Source: USGS-ONHW Research Collaboration, 2006

Natural Hazard Mitigation Plan Introductory Meeting

City of Johnson City
 May 5, 2009
 7:00 to 8:30pm

First	Last	Agency	Job Title	Email	Roundtrip Mileage
KAY	Mordock	Johnson City	Mayor	Johnson.City@Hotmail.com	
Bill	Mordock	Johnson City	Planning Commission	" " " "	"
Judy	Davis	Johnson City	City Recorder	" "	"
Kevin	Donegan	Clackamas Fire Dist #1	Emergency Mgr.	KevinDonegan@ccfd1.com	
BRIAN	Johnson	Johnson Mobile Estates	CEO		

Meeting: Johnson City Natural Hazard Mitigation Plan Meeting 1
Date: June 2, 2009
Time: 6:00pm
Location: City Hall

MINUTES

1. Meeting attendees
 - a. Kevin Donegan, Clackamas Fire District #1 Emergency Manager
 - b. Kim Glover, Johnson City Council
 - c. Brian Johnson, Johnson Mobil Estates CEO
 - d. Kay Murdock, Johnson City Mayor
 - e. Bill Murdock, Johnson City Planning Commission

2. Planning Process
 - a. Mission and Goals
 - i. The group agreed to adopt the mission and goals of the Clackamas County Natural Hazards Mitigation Plan
 - b. Plan Adoption
 - i. The plan will be adopted by the City Council
 - c. Coordinating Body
 - i. The Hazard Mitigation Task Force will be responsible for implementing the plan
 - d. Convener
 - i. The Clackamas Fire District #1 Emergency Manager will serve as plan convener
 - e. Public Involvement
 - i. A copy of the plan will be available at City Hall
 - ii. Bring a copy of the plan to city-wide events, such as the annual Picnic in the Park
 - iii. The plan will be publicized in the JC Newsletter
 - iv. The city will schedule meetings when deemed necessary

3. Mitigation Planning Priority System Discussion
 - a. The group will use the Oregon Partnership for Disaster Resilience priority system

4. Hazard Identification
 - a. The group reviewed a handout Laurel provided. The following items differ from the handout.
 - b. Flood
 - i. During the December '08/January '09 winter storm a deluge of water hit the northwest corner of the city because Kellogg Creek, located outside city limits, was filled with

debris and water could not drain water correctly.

This part of Kellogg Creek is under county jurisdiction. Homes are elevated at least two feet so no home was damaged in the deluge, but streets were flooded and cars could not drive through this part of the city. The flooding came up to the base of the laundry room. This flood was the highest they've seen.

ii. Impacts

1. Flooding is worst on SE 79th St (where the laundry room is located). If the flooding on 79th is bad enough it continues to work its way up SE Lupine St.
2. Leona Lake has never flooding in the past. Over two feet of water would have to be added to Leona Lake before it would breach the road.

iii. Probability: High

iv. Vulnerability: Moderate

v. Mitigation Steps

1. Homeowners have the option to participate in the National Flood Insurance Program, although no homes are in a mapped flood plain and therefore they are not required to carry flood insurance.
2. Catch basins that drain into Lake Leona are cleaned each year. This reduces the risk of urban flooding.

c. Landslide

i. Johnson City has no history of landslides

ii. Impacts

1. The only location of a slope is between 81st and 83rd streets. These are not steep slopes however. The RV lot and a few homes are located near these slopes.
2. If a landslide were to occur, it could impact water, gas, and power lines.

iii. Probability: Low. Johnson City has a fairly level topography and vegetation covers the few slopes within the city. Additionally the city has clay soils, which are less prone to slides.

iv. Vulnerability: Low

v. Mitigation

1. The city encourages planting of native species and maintains vegetation coverage on the slopes

d. Wildfire

i. ~~A brush fire broke out in summer (what year?) on the hill between 81st and 83rd streets. The fire was quickly contained and no damages occurred.~~

ii. Impacts

1. The slope between 81st and 83rd is the main location a fire could occur. A fire here could impact 3 homes.
- iii. Probability: Moderate
- iv. Vulnerability: Moderate
- v. Mitigation Steps
 1. The city has an ordinance against fireworks of any kind
 2. A city ordinance requires that lawns be properly maintained
 3. All homes have visible house numbers for easy notification of the fire department
- e. Severe Storm: Wind and Winter
 - i. October 1962 Columbus Day windstorm – A couple fir trees toppled over onto homes
 - ii. December 1995 windstorm – A dead tree on 84th fell onto and totaled a pickup truck.
 - iii. December 26, 2008 to January 2, 2009 – the homes are not designed for the snow load they had on their roofs, but only a few awnings were damaged.
 - iv. Impacts
 1. Winter storms are worse than windstorms. A number of elderly citizens live in Johnson City and snowy conditions make it difficult for them to leave.
 2. Awnings and roofs are vulnerable to damage or collapse with heavy snow loads. Awnings are also vulnerable to severe wind events.
 3. The homes in Johnson City are not required to be tied down because they sit lower in the region and don't receive as much wind.
 4. Plowing can create snow berms and make it difficult for people to access their homes. Johnson City has driveways every 30 to 40 feet so it is better to let the snow melt on its own.
 5. In snow/ice events more traffic accumulates at the northwest exit because it is flatter than the 81st street exit.
 - v. Probability: High for winter; moderate for wind
 - vi. Vulnerability: Moderate for winter, low for wind
 - vii. Mitigation
 1. Most utilities are underground. Two-thirds of the telephone and power lines are underground, and all water, sewer, and gas lines are underground.
 2. Most of the hazardous trees have been cut down. If a citizen complains about a potentially dangerous tree Brian will cut the tree down.
- f. Earthquake

- i. The county plan accurately describes the history and causes and characteristics of the earthquake hazard in Johnson City.
 - ii. Impacts
 - 1. The biggest threat in Johnson City is earthquake because homes could be shook off their foundations. Some homes are elevated on blocks and others are situated on dirt. The homes are designed to withstand a quake and should not collapse, but they could be damages beyond repair.
 - 2. Some utility lines run underneath homes. If a utility breaks in an earthquake access to these utility lines could be an issue.
 - iii. Probability: High
 - iv. Vulnerability: High
 - v. Mitigation
 - 1. City Hall is situated on a concrete foundation strap so it should not move off its foundation.
 - 2. The old water tower is disconnected from the water lines that feed into the main system. If it is damaged it will not disrupt the main water supply.
- g. Volcano
- i. The county plan accurately describes the history, causes and characteristics, and impacts of volcanic eruptions.
 - ii. Probability: Low
 - iii. Vulnerability: High
5. Next Time: Action Items
- i. Think of actions items as your wish list – if someone gave you a pot of money to spend on mitigation projects what would you do?
 - ii. The next meeting will be June 23rd at 6:00pm.

Natural Hazard Mitigation Plan Meeting 1

City of Johnson City
 June 2, 2009
 6:00 PM

First	Last	Agency	Job Title	Email	Roundtrip Mileage
KAY	Mordock	Johnson City	Mayor	Johnson.City@holma.com	
Bill	Mordock	Johnson City	Planning Commission Chairman		
Kevin	Donegan	Clackamas Fire Dist. #1	Emergency Mgr.	Kevin.don@ccfd1.com	?
BRAD	Johnson	JMP LLC			
Ron	Glover	Johnson City	Council	glover.kimberly	—

Meeting: Johnson City Natural Hazard Mitigation Plan Meeting 2
Date: June 23, 2009
Time: 6:00pm
Location: City Hall

AGENDA

1. Meeting Attendees
 - a. Kay Mordock, Johnson City Mayor
 - b. Bill Mordock, Planning Commission
 - c. Kim Glover, Johnson City Council Member
 - d. Kevin Donegan, Clackamas Fire District #1 Emergency Manager
 - e. Brian Johnson, Johnson Mobile Estates Property Manager
 - f. Elizabeth Collins, Johnson City Council Member

2. Formal Review Process and Plan Maintenance
 - a. The City Council will assign representatives to the committee
 - b. The committee will meet twice a year. The first meeting will be held in spring to discuss the previous hazard season (severe storm, flood, etc) and prepare for upcoming hazard seasons (wildfire, earthquake awareness month, etc). The second meeting will be held in fall.
 - c. During the first meeting, the committee will:
 - Discuss funding opportunities for the implementation of mitigation strategies.
 - Review existing action items to determine appropriateness for funding;
 - Educate and train new members on the plan and mitigation in general; and
 - Identify issues that may not have been identified when the plan was developed.During the second meeting of the year, the committee will:
 - Review existing and new risk assessment data, and incorporate this information into the plan;
 - Document success in implementing mitigation actions and/or applying for funding;
 - Discuss the addition and/or subtraction of mitigation actions from the plan;
 - Discuss methods for continued public involvement;
 - Document successes and lessons learned during the year; and
 - Generate a list of members that should be included in future meetings.
 - d. Timeline for plan updates

- i. The plan will be updated every five years follow the follow county's update cycle. This means the first update will be due in September 2012.
 - ii. The update process will begin in September 2011 to allow sufficient time for update, FEMA review and edits.
 - e. The convener will be responsible for developing and facilitating plan update meetings. The committee will assist the convener throughout the update process.
 - f. During the plan evaluation the committee will ask:
 - Have public involvement activities taken place since the plan was adopted?
 - Are there new hazards that should be addressed?
 - Have there been hazard events in the community since the plan was adopted?
 - Have new studies or previous events identified changes in any hazard's location or extend?
 - Has vulnerability to any hazard changed?
 - Are there new high risk populations?
 - Are there completed mitigation actions that have decreased overall vulnerability?
 - Did the plan identify the number and type of existing and future buildings, infrastructure, and critical facilities in hazards areas?
 - Did the plan identify data limitations?
 - Did the plan identify potential dollar losses for vulnerable structures?
 - Are the plan goals still relevant?
 - What is the status of each mitigation action?
 - Are there new actions that should be added?
 - Is there an action dealing with the National Flood Insurance Program?
 - Are changes to the action item prioritization, implementation, and/or administration processes needed?
 - Do changes need to be made within the five year update schedule?
 - Is mitigation being implemented through existing planning mechanisms (such as comprehensive plans)?
3. Review Anatomy of an Action Item
 - a. Laurel reviewed the elements to be included in an action item before the group began discussions.
4. Update and Brainstorm Action Items
 - a. Laurel provided the group with a list of potential action items based on the vulnerabilities they identified in the previous meeting.

The group reviewed and updated the action items and added new ones as they saw fit.

- b. See the attached action item sheet for final list

5. Next Steps

- a. Laurel will compile the plan and email it out to the committee for review. The Oregon Partnership for Disaster Resilience will also edit the plan.
- b. Once a final draft is completed it will need to be presented to the public for their comments. This can mean posting the plan online, writing a press release, presenting it at a community meeting/event, etc.
- c. Once public comment is completed the plan will be sent into FEMA for preliminary review. Preliminary review takes between 40 and 60 days.
- d. FEMA will either pre-approve the plan or return the plan with edits. Laurel will make any necessary edits and then resubmit the plan. If Laurel is gone before this stage the Oregon Partnership for Disaster Resilience will help with the edits.
- e. After we've gained pre-approval the plan will need to be adopted by City Council and then resent to FEMA for official approval.

Natural Hazard Mitigation Plan Meeting

City of Johnson City
 June 23, 2009
 6:00pm

First	Last	Agency	Job Title	Email	Roundtrip Mileage
KAY	Mordock	Johnson City	MAYOR	Johnson.City@ptdmail.com	
Bill	Mordock	" "	Planning Commission	" "	
Kim	Glover	" "	Council	" "	
Kevin	Donegan	Clackamas Fire Dist. #1	Emergency mgr.	Kevin.don@fd1.com	
BRIAN	Johnson	Johnson Mobile Estate	property mgr		
Elizabeth	Collins	Johnson City	Council	LIZZ1717@MSN.COM	

Your City Government

City Councilors:

Henry Heerspink

Kim Glover

Elizabeth Collins

Jeanetta English

Mayor Kay Mordock

City Recorder Judy Davis

Planning Commissioners:

Bill Mordock

B.J. DiCario

One Vacancy

Office Hours

Mondays ~ 9:30 a.m. – 2:30 p.m.

Tuesdays ~ 2 – 7 p.m.

Thursdays ~ 9:30 a.m. – 1 p.m.

City News!



Johnson City Natural Hazards Mitigation Plan

What does a mitigation plan do?

A natural hazards mitigation plan provides a community with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. The process of developing a mitigation plan can also forge new partnerships among community organizations, businesses, and local citizens. These partnerships can lead to the development and implementation of risk assessment and assist the community in reducing losses from any future natural disaster events.

How has Clackamas County helped with this process?

Clackamas County adopted its Natural Hazard Mitigation Plan in

2002 and updated it in 2007. Each city under its jurisdiction is encouraged to prepare an addendum to the county's plan. To assist in this process Clackamas County partnered with the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon to hire a coordinator to assist cities in developing the addendum.

What has Johnson City done?

Johnson City has worked with the coordinator to develop a draft addendum to the county's plan. The plan draft is available for comment at the city office or online at www.oregonshowcase.org/projects/clackamascities. Comments can be made by e-mail to johnson.city@hotmail.com or dropped off at city hall by October 19.

Harvest Station Planning Underway

Mark your calendar for Harvest Festival ~ Saturday, October 31!

Also, we could use your help with planning. Leave a message at the city office with your name, number, etc. if you are willing to help with this fun event.

Help Needed!

Appendix B: Action Item Worksheets

Multi Hazard #1

Proposed Action Item:		Alignment with Plan Goals:	
Develop public education programs to inform the public about methods of mitigating the impacts of natural hazards.		<i>Protect Life and Property, Promote Public Awareness, Encourage Partnerships and Implementation</i>	
Rationale for Proposed Action Item:			
<ul style="list-style-type: none"> • Conducting public outreach campaigns raises awareness about natural hazards and helps illustrate what residents and businesses can do to reduce the impact of a natural disaster on their properties, thereby significantly reducing the impact of natural hazards on the City of Wilsonville. • The Disaster Mitigation Act of 2000 requires that communities continue to involve the public beyond the original planning process [201.6(c)(4)(ii)]. Developing public education programs for hazard risk mitigation would be a way to keep the public informed of, and involved in, the county's actions to mitigate hazards. 			
Ideas for Implementation:			
<ul style="list-style-type: none"> • Conduct public education as hazard seasons approach. These include earthquake awareness month in April, wildfire prevention in summer, and flood and severe storm information in winter; • Partner with Clackamas County and other jurisdictions to develop public education flyers for all hazards; • Include insurance information in public outreach and education materials and promote purchase of appropriate insurance coverage; • Provide hazard information at City Hall; and • Utilize the Johnson City Newsletter to disseminate hazard information. 			
Coordinating Organization:		Hazard Mitigation Task Force	
Internal Partners:		External Partners:	
City Council		Clackamas Fire District #1, Clackamas County, Oregon Partnership for Disaster Resilience	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
Ongoing			
Form Submitted by:	Hazard Mitigation Task Force		
Status	New Action, 2009		

Multi Hazard #2

Proposed Action Item:		Alignment with Plan Goals:	
Integrate the goals and action items from the Natural Hazards Mitigation Plan into existing regulatory documents and programs, where appropriate.		<i>Protect Life and Property, Promote Public Awareness, Enhance Natural Systems, Encourage Partnerships and Implementation, Augment Emergency Services</i>	
Rationale for Proposed Action Item:			
<ul style="list-style-type: none"> The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community [201.6(c)(3)(ii)]. Incorporating natural hazards plans into comprehensive plans, local ordinances, and land-use regulations will ensure that communities implement the proper mitigation measures for their community. 			
Ideas for Implementation:			
<ul style="list-style-type: none"> Use the mitigation plan to help the city's Comprehensive Land Use Plan meet State Land Use Planning Goal 7, designed to protect life and property from natural disasters and hazards through planning strategies that restrict development in areas of known hazards; Use the natural hazard mitigation planning resources provided by the Oregon Partnership for Disaster Resilience to learn how to better integrate the NHMP into existing documents and programs. 			
Coordinating Organization:		Hazard Mitigation Task Force	
Internal Partners:		External Partners:	
City Council		Oregon Partnership for Disaster Resilience, Clackamas County Planning	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
<u>Ongoing</u>			
Form Submitted by:	Hazard Mitigation Task Force		
Status	New Action, 2009		

Multi Hazard #3

Proposed Action Item:		Alignment with Plan Goals:
Identify and pursue funding opportunities to develop and implement hazard mitigation activities.		<i>Protect Life and Property, Promote Public Awareness, Enhance Natural Systems, Encourage Partnerships and Implementation, Augment Emergency Services</i>
Rationale for Proposed Action Item:		
<ul style="list-style-type: none"> • Implementation cannot occur without proper funding. The switch from planning to implementation is the step that begins the reduction of risk. • The Pre-Disaster Mitigation Grant Program provides funds for hazard mitigation planning and project implementation prior to a disaster event. PDM grants are nationally competitive. • The Hazard Mitigation Grant Program provides funds to implement long-term hazard mitigation measures and projects after a major disaster declaration. HMGP funds are available to communities within states that have recently received Presidential Disaster Declarations. HMGP funds are prioritized for communities that are directly affected by a disaster, but communities outside of the disaster declaration are typically eligible as well. • Flood Mitigation Assistance helps communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program. 		
Ideas for Implementation:		
<ul style="list-style-type: none"> • Allocate city resources and assistance to mitigation projects when possible; and • Partner with other organizations and agencies to identify grant programs and foundations that may support mitigation activities. 		
Coordinating Organization:	Hazard Mitigation Task Force, Clackamas Fire District #1, Johnson Mobile Estates	
Internal Partners:	External Partners:	
City Council	Clackamas County Emergency Management, Clackamas Fire District #1, Oregon Emergency Management, FEMA Region X	
Timeline:	If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)	
	Ongoing	
Form Submitted by:	Hazard Mitigation Task Force	
Status	New action in 2009	

Multi Hazard #4

Proposed Action Item:		Alignment with Plan Goals:	
Continue to update and improve hazard assessments in the Natural Hazards Mitigation Plan as new information becomes available.		<i>Promote Public Awareness, Augment Emergency Services</i>	
Rationale for Proposed Action Item:			
<ul style="list-style-type: none"> • At this time the city does not have in-house GIS capabilities. • The city was unable to conduct a quantitative risk analysis for most hazards. • Oregon updates the state risk assessment once every three years. Communities are informed of new risk information if it affects areas in their jurisdiction. • New demographic data will become available after the 2010 census. 			
Ideas for Implementation:			
<ul style="list-style-type: none"> • Cooperate with participating agencies to secure funding needed to obtain data to perform a risk analysis; • Use available GIS hazards maps as information gets updated; • Use new data to guide public outreach programs and update educational outreach pieces; and • Update codes and city policies when new data and information becomes available as required by state planning goal 7. 			
Coordinating Organization:		Hazard Mitigation Task Force	
Internal Partners:		External Partners:	
City Council		Clackamas County Emergency Management, METRO, Oregon Emergency Management, DOGAMI, FEMA Region X	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
Ongoing			
Form Submitted by:	Hazard Mitigation Task Force		
Status	New Action, 2009		

Multi Hazard #5

Proposed Action Item:		Alignment with Plan Goals:	
Maintain records of the locations of all underground utility lines.		<i>Protect Life and Property, Promote Public Awareness, Enhance Natural Systems, Encourage Partnerships and Implementation</i>	
Rationale for Proposed Action Item:			
<ul style="list-style-type: none"> Some utility lines, such as water and power, are located beneath homes and access during an emergency situation could be an issue. Knowing the locations of buried utilities will help expedite emergency shut off procedures. 			
Ideas for Implementation:			
<ul style="list-style-type: none"> Map underground utilities; Inform key city leaders where underground utilities are located; and Teach CERT team members how to shut off utilities in an emergency. 			
Coordinating Organization:		Johnson Mobile Estates	
Internal Partners:		External Partners:	
Hazard Mitigation Task Force		Clackamas Fire District #1	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
<u>Ongoing</u>			
Form Submitted by:	Hazard Mitigation Task Force		
Status	New Action, 2009		

Flood #1

Proposed Action Item:		Alignment with Plan Goals:	
Explore participation in the National Flood Insurance Program (NFIP).		<i>Protect Life and Property, Promote Public Awareness, Enhance Natural Systems, Encourage Partnerships and Implementation, Augment Emergency Services</i>	
Rationale for Proposed Action Item:			
<ul style="list-style-type: none"> The National Flood Insurance Program provides communities with federally backed flood insurance to homeowners, renters, and business owners, provided that communities develop and enforce adequate floodplain management ordinances. The benefits of adopting NFIP standards for communities are a reduced level of flood damage in the community and stronger buildings that can withstand floods. According to the NFIP, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance. The Disaster Mitigation Act of 2000 requires communities to identify mitigation actions that address new and existing buildings and infrastructure [201.6(c)(3)(ii)]. Continued participation in the NFIP will help reduce the level of flood damage to new and existing buildings in communities while providing homeowners, renters and business owners additional flood insurance protection. 			
Ideas for Implementation:			
<ul style="list-style-type: none"> Research NFIP eligibility and participation requirements; Evaluate the costs and benefits of joining the NFIP, and Coordinate with Clackamas County and FEMA to pursue participating in the NFIP. 			
Coordinating Organization:		Hazard Mitigation Task Force	
Internal Partners:		External Partners:	
City Council		FEMA, DLCD, Clackamas County Planning Department	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
Ongoing			
Form Submitted by:	Hazard Mitigation Task Force		
Status	New Action, 2009		

Flood #2

Proposed Action Item:		Alignment with Plan Goals:	
Coordinate with Clackamas County to keep Kellogg Creek clear of debris.		<i>Protect Life and Property, Enhance Natural Systems, Augment Emergency Services</i>	
Rationale for Proposed Action Item:			
<ul style="list-style-type: none"> • Kellogg Creek is the only source of flooding for Johnson City. The flooding of 2009 resulted because water could not 			
Ideas for Implementation:			
<ul style="list-style-type: none"> • Contact the county flood plain manager to discuss the flooding issues on Kellogg Creek; • Discuss debris removal options with the Clackamas County Department of Environmental Quality; and • Partner with local groups to organize cleaning efforts. 			
Coordinating Organization:		Johnson Mobile Estates	
Internal Partners:		External Partners:	
Hazard Mitigation Task Force		Clackamas County Planning Department, Clackamas County Department of Environmental Equality	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
	Ongoing		
Form Submitted by:	Hazard Mitigation Task Force		
Status	New Action, 2009		

Earthquake #1

Proposed Action Item:		Alignment with Plan Goals:	
Encourage structural and non-structural mitigation projects.		<i>Protect Life and Property, Encourage Partnerships and Implementation, Augment Emergency Services</i>	
Rationale for Proposed Action Item:			
<ul style="list-style-type: none"> The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6(c)(3)(ii)]. Implementing structural and non-structural mitigation programs will reduce the potential for life loss in public buildings and assist a community in reducing its overall earthquake risk. Pre-disaster mitigation strategies will reduce post-disaster response needs by lessening life loss, injury, damage, and disruption. 			
Ideas for Implementation:			
<ul style="list-style-type: none"> Teach homeowners how to strap down water heaters; Provide information to citizens on nonstructural mitigation techniques including: securing bookcases, filing cabinets, light fixtures, and other objects that can cause injuries and block exits; Educate citizens on earthquake preparedness; Encourage citizens to refer to FEMA's practical guidebook: Reducing the Risks of Nonstructural Earthquake Damage; and Research methods of securing mobile homes and research possible grants for steel bracing of mobile homes. 			
Coordinating Organization:		Hazard Mitigation Task Force	
Internal Partners:		External Partners:	
City Council, Johnson Mobile Estates		Clackamas Fire District #1, Oregon Occupational Safety and Health Administration	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
	3 years & ongoing		
Form Submitted by:		Hazard Mitigation Task Force	
Status		New Action, 2009	