

## CHAPTER 1

### INTRODUCTION

#### 1.1 BACKGROUND

The Municipality of Anchorage (MOA) is vulnerable to a wide range of natural, technological, and human/societal hazards including earthquakes, avalanches, and hazardous material accidents. These hazards can affect the safety of residents, damage or destroy public and private property, disrupt the local economy, and negatively impact the quality of life.

Typically, we cannot eliminate these hazards altogether but we can lessen their impact by participating in hazard mitigation. Hazard mitigation is any action taken to reduce or eliminate the long-term risk to property and human life from hazards.

#### Benefits of hazard mitigation include...

- 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
- Expedited pre-disaster and post-disaster grant funding
- Increased disaster resilience
- Improved environmental quality
- Improved economic vitality
- Improved quality of life

There are a wide variety of hazard mitigation activities available. They can be structural in nature such as reinforcing a building's foundation or constructing a levee, or they can be non-structural such as rezoning a flood-prone area or securing a water heater to a wall. Mitigation activities can focus on preventing the damage from occurring in the first place (by limiting development in hazard prone areas), or by protecting against damage (strengthening existing or future development so that it is not damaged by a hazard event). More information about hazard mitigation activities can be found in Chapter 6.

One of the most effective tools to reduce vulnerability to hazards is a local hazard mitigation plan. A hazard mitigation plan identifies what hazards exist in the community and establishes goals and specific mitigation activities to be undertaken.

To encourage communities to develop hazard mitigation plans, the United States Congress passed the Disaster Mitigation Act of 2000 (DMA 2000). This Act requires local governments to have a Federal Emergency

Management Agency (FEMA) approved mitigation plan by November 2004 to remain eligible for Hazard Mitigation Grant Program (HMGP) funding, and Pre-Disaster Mitigation (PDM) grants.

This plan for the MOA has been prepared in coordination with the Alaska Division of Homeland Security and Emergency Management (ADHS&EM) to ensure it meets all applicable DMA 2000 requirements. A Local Mitigation Plan Crosswalk, found in Appendix D, provides a summary of federal and state minimum standards and documents where each requirement is met within the plan.

## 1.2 PURPOSE

The purpose of this plan is to:

- Fulfill the DMA 2000 local hazard mitigation plan requirements.
- Serve as a qualifying document for hazard mitigation programs coordinated through the ADHS&EM.
- Identify hazards, mitigation goals and objects, and potential mitigation projects within the MOA.

## 1.3 HOW THIS PLAN WILL BE USED

A hazard mitigation plan is not intended to be developed and forgotten because it is the implementation of the plan that is essential. To be effective, the goals of the plan need to be incorporated into the everyday activities of the Municipality. As a result, this plan should be used to modify existing Municipal plans and policies so that they support the Municipality's hazard mitigation goals.

## 1.4 SUMMARY OF HAZARDS IN ANCHORAGE

According to the MOA's 2002 Draft Comprehensive Emergency Management Plan (CEMP), Anchorage is vulnerable to three main types of hazards – natural, technological, and human/societal hazards. Table 1.1 shows the types of potential hazards in Anchorage.

**Table 1.1 Potential Hazards in Anchorage**

<i>Natural</i>	<i>Technological</i>	<i>Human/Societal</i>
Earthquake	Air Pollution	Attack
Wildfire	Dam Failure	Civil Disturbance
Severe Wind Storm	Energy Emergency: Fuel/Resource Shortage	Terrorism, Weapons of Mass Destruction (WMD): <ul style="list-style-type: none"><li>▪ Biological</li><li>▪ Chemical</li><li>▪ Nuclear</li></ul>

Winter Storm	Fire: Explosion/Structural	
Flood	Hazardous Materials	
Avalanche	Power Failure (Outage)	
Landslide	Radiation Release	
Volcanic Ashfall	Transportation Accident: <ul style="list-style-type: none"> <li>▪ Aircraft</li> <li>▪ Marine</li> <li>▪ Motor Vehicle</li> </ul>	
Tsunami		
Erosion*		

Source: 2002 Draft CEMP

Note: \*Erosion is not included in the CEMP but has been added based on other information.

Hazards are measured in terms of their frequency and severity. Frequency is the number of times the hazard has occurred. Severity measures how bad the situation can be and is based on several factors including: the number of deaths/injuries; how long critical facilities are shutdown; extent of property damage; effect on economy; and the effect on response systems. Table 1.2 shows the frequency and severity of Anchorage's potential hazards.

**Table 1.2 Hazard Rating Matrix**

		Frequency			
		Has not Occurred yet	Low	Medium	High
Severity	Catastrophic	<ul style="list-style-type: none"> <li>▪ Weapons of Mass Destruction (Biological, Chemical and Nuclear)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Earthquake</li> <li>▪ Attack</li> </ul>		
	Critical	<ul style="list-style-type: none"> <li>▪ Radiation Release</li> </ul>		<ul style="list-style-type: none"> <li>▪ Wildfire</li> </ul>	<ul style="list-style-type: none"> <li>▪ Power Outage</li> </ul>
	Limited	<ul style="list-style-type: none"> <li>▪ Energy Shortage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Civil Disturbance</li> </ul>	<ul style="list-style-type: none"> <li>▪ Landslide</li> </ul>	<ul style="list-style-type: none"> <li>▪ Avalanche</li> <li>▪ Winterstorm</li> <li>▪ Fire</li> <li>▪ Transportation Accident (Aircraft, Marine, Motor Vehicle)</li> </ul>
	Negligible	<ul style="list-style-type: none"> <li>▪ Tsunami</li> <li>▪ Dam Failure</li> </ul>		<ul style="list-style-type: none"> <li>▪ Volcano Ash</li> </ul>	<ul style="list-style-type: none"> <li>▪ Floods</li> <li>▪ Windstorms</li> <li>▪ Air Pollution</li> <li>▪ Hazardous Materials</li> </ul>

Source: 2002 Draft CEMP

<u>Frequency</u>	<u>Severity</u>
<b>High:</b> At least one occurrence every 1-4 years.	<b>Catastrophic:</b> More than 50 deaths/injuries; Complete shutdown of critical facilities for 20 days or more; More than 50% property damage; Severe long-term effects on economy; Severely affects state/local/private sectors' capabilities to begin or sustain recovery activities; Overwhelms local and state response resources.
<b>Medium:</b> At least one occurrence every 5-10 years.	<b>Critical: (Major)</b> 10-50 deaths/injuries; Shutdown of critical facilities for 8-30 days; 25-50% property damage; Short-term effect on economy; Temporarily (24-48 hours) overwhelms response resources.
<b>Low:</b> At least one occurrence every 11-100 years.	<b>Limited:</b> Less than 10 deaths/injuries; Shutdown of critical facilities for 3-7 days; 10-25% property damage; Temporary effect on economy; No effect on response system.
<b>Has Not Occurred:</b> Has not occurred, but for planning purposes should be evaluated as part of jurisdictions Hazard and Vulnerability Assessment.	<b>Negligible:</b> Minor injuries; No deaths; Shutdown of critical facilities for less than 3 days; Less than 10% property damage; No effect on economy; No effect on response system.

After identifying the hazards, the potential consequences of the hazard need to be considered. One potential consequence is property damage. Potential property damage was estimated using Geographical Information System (GIS) analysis. Table 1.3 shows the number of parcels and the taxable value (land and structures) that are vulnerable to each hazard.

**Table 1.3 Vulnerability Summary**

<b>Hazard</b>	<b>Number of Parcels</b>	<b>Taxable Value</b>
Earthquake	81,846	\$16,449,220,529
Wildfire	N/A	N/A
Extreme Weather		
Winter Storm	81,846	\$16,449,220,529
Heavy Snow	81,846	\$16,449,220,529
Heavy Rain	81,846	\$16,449,220,529
Extreme Cold	81,846	\$16,449,220,529
Ice Storm	81,846	\$16,449,220,529
Wind	40,438	\$15,578,810,902
Fog	81,846	\$16,449,220,529
Flooding	3,333	\$642,907,383
Avalanche	677	\$67,006,331
Ground Failure		
Seismically Induced Ground Failure	66,338	\$14,167,753,699
Tsunami	N/A	N/A
Volcano	81,846	\$16,449,220,529
Erosion		
Riverine Erosion	88	\$8,314,800

Source: MOA and HDR, 2003

## 1.5 SCOPE

As table 1.3 shows, Anchorage's greatest potential losses come from earthquakes and extreme weather events. Both of these hazards also cover a large geographic area. As a result, it was decided by the MOA and ADHS&EM to concentrate on these hazards. It also was decided to emphasize wildfire hazard because the Anchorage Fire Department (AFD) is doing a lot of work in this area and because most of the areas with a significant wildfire threat are primarily residential in nature.

Information about other natural hazards was included in this plan if it was readily available, but it is acknowledged that some information needs to be supplemented by additional research and analysis. Information about technological and human/societal hazards, for example, will be addressed in subsequent plan updates.

## 1.5 ORGANIZATION OF THE PLAN

The plan is organized as follows:

### **Chapter 1**

Chapter 1 is an introduction to the plan and includes the purpose, scope, and organization of the plan, as well as a description of the planning process.

### **Chapter 2**

Chapter 2 is a community profile providing an overview of the MOA's:

- Location,
- Natural Setting,
- History,
- Demographics,
- Economy.

### **Chapter 3**

Chapter 3 is an asset inventory identifying what development could be vulnerable to a hazard event.

### **Chapter 4**

Chapter 4 provides details about the hazards that can occur in Anchorage. For each hazard, there is a description of the hazard's characteristics, the location where the hazard can occur, previous occurrences of the hazard, and what is vulnerable to the hazard. Where possible, the location of the hazard area has been mapped.

## **Chapter 5**

Chapter 5 contains the MOA's mitigation strategy including mitigation goals, objectives, and action items. This chapter also contains information about how the mitigation measures will be implemented.

## **Chapter 6**

This chapter is devoted to the maintenance, evaluation, and updating of the plan.

## **Appendices**

The appendices contain the plan's supporting documentation including a list of abbreviations and references.

### **1.6 PLANNING PROCESS**

The planning process was lead by the MOA's Project Management and Engineering (PM&E) department. A consulting firm, HDR Alaska Inc., was retained to assist with the planning process and development of the plan.

The planning process began with the establishment of the core MOA planning team. The MOA planning team consisted of representatives from:

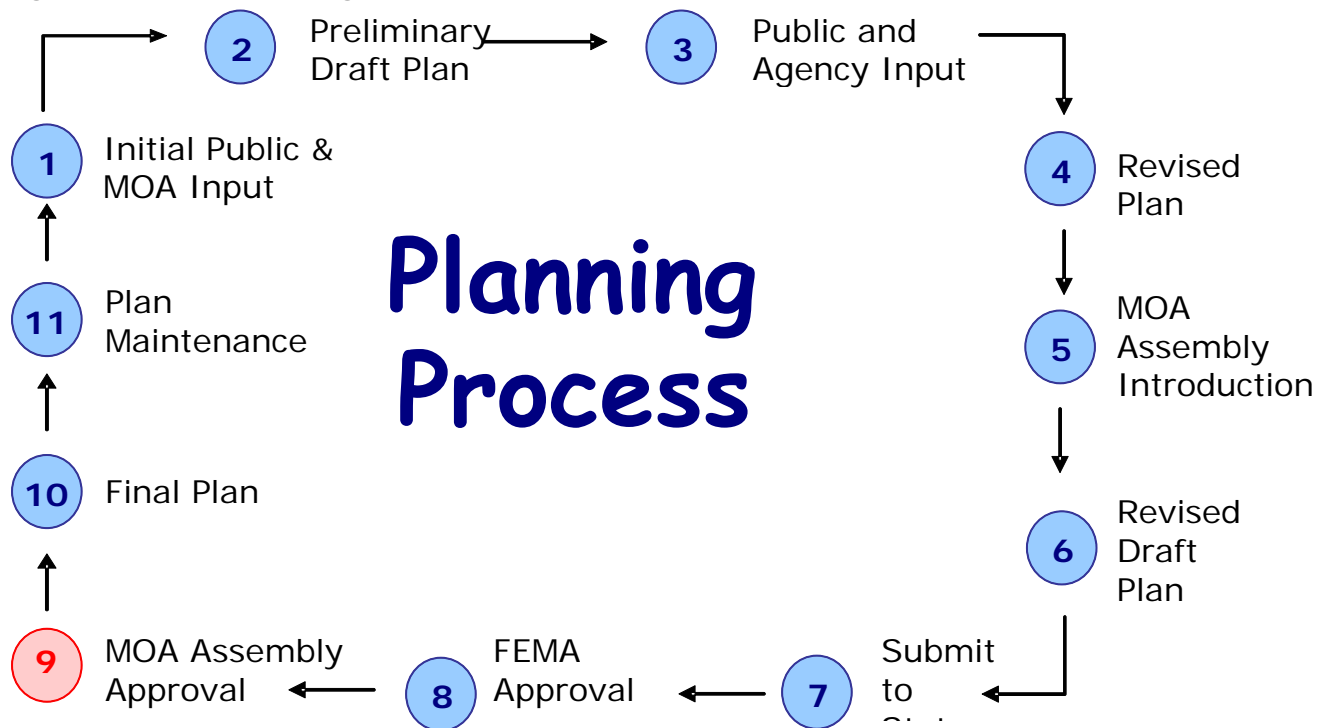
- PM&E
- Maintenance & Operations (M&O)
- Anchorage Fire Department (AFD)
- Anchorage Police Department (APD)
- Anchorage Water & Wastewater Utility (AWWU)
- Office of Emergency Management (OEM)
- Planning
- Anchorage School District (ASD)
- Mayor's Office
- Watershed Management

The next step was to review the existing documentation including AFD's Wildfire Strategic Plan, Anchorage 2020, and the CEMP. This helped to identify the hazards and risk areas in Anchorage. Once these were determined, a public meeting was held to inform the public about the plan and to ask if the public had any additional information about hazards in Anchorage.

The next step was to develop goals, objectives, and action items. First, the existing goals and objectives were identified. Based on input from the planning team, additional goals and objectives were then added and a list of action items was developed.

The next task was to develop a draft hazard mitigation plan. This draft was made available for review by the public and other interested parties. Based on the comments provided on the draft plan, the plan was then revised and introduced to the MOA Assembly. Next, the plan was submitted to ADHS&EM and FEMA for approval. Once FEMA approves the plan, it will go back to the MOA Assembly for adoption. This process is illustrated in Figure 1.1.

**Figure 1.1 The Planning Process**



### 1.7 PUBLIC INVOLVEMENT

To ensure there were adequate opportunities for citizen input, a Public Involvement Plan (PIP) was established (see Appendix B) and implemented. Four open house public meetings were held. The first meeting, held on November 6, 2003, was to announce the kick-off of project and to provide the public with the opportunity to comment on the information collected to date. The meeting material is available in the PIP appendix.

The remaining three meetings were held in September 2004 to present the preliminary draft plan. The material presented was the same for all three meetings and is included in the public involvement appendix.

Other opportunities for public involvement included:

- Presentation to the Federation of Community Council (FCC)
- Website including an On-line survey – linked from PM&E, OEM, and the MOA home pages.

The public meetings were advertised through the Anchorage Daily News, MOA's city website, FCC email list, and the "What's Up" weekly e-mail. The final three public meetings were also advertised in the Turnagain Times and the Alaska Star.

For more information about the planning process and participants, please see the public involvement appendix.