

# HA 6: Volcanic Ash

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## 1.0 Introduction

### Coordinating Agency:

- Lewis & Clark County Disaster & Emergency Services (LCCO DES)

### Cooperating Agencies:

- All City & County Departments
- Lewis & Clark City-County Health Department
- St. Peter's Hospital
- Emergency Medical Services (EMS)
- Local School Districts
- Local Churches
- United Way
- Local Volunteer Organizations (NGOs, CBOs, FBOs, CERT etc.)
- Capitol City Amateur Radio Club (CCRC)/Amateur Radio Emergency Services (ARES)
- American Red Cross (ARC)
- Special Needs Facilities
- Salvation Army
- Civil Air Patrol (CAP)
- Montana Disaster & Emergency Services (MTDES)
- Montana Department of Public Health & Human Services (DPHHS)
- Montana Department of Transportation (MDT)
- Montana Department of Environmental Quality (DEQ)

### 1.1 Purpose

The purpose of this plan is to outline the procedures/guidelines, services, and response actions to be used by local agencies during a volcanic ash incident.

### 1.2 Scope

This annex applies to any volcanic eruption/ash incident that impacts Lewis & Clark County.

### 1.3 Activation & Plan Maintenance

This annex may be activated independently or in conjunction with other Annexes, depending on the needs of the situation.

The primary responsibility for development and maintenance of this annex is that of LCCO DES with support from all cooperating agencies and departments.

This annex should be reviewed and revised annually, unless significant changes warrant earlier revision. Continued and regular revision and updating should keep this document valid and useful. Regular testing and exercising should establish the groundwork for efficient and expeditious delivery of assistance in times of emergency or disaster.

### 1.4 Policies

- ❖ This annex is effective upon approval.
- ❖ All appropriate governmental and volunteer agency resources should be used as available.
- ❖ State and Federal assistance should be sought if injuries and damages go beyond our response capabilities.
- ❖ All services should be provided without regard to economic status or racial, religious, political, ethnic, or other affiliation.
- ❖ The on-scene Incident Commander (IC) has authority to coordinate the use of resources and personnel at the scene of the emergency and to request additional resources through the EOC.

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- ❖ The principal elected officials have the authority to declare a State of Emergency/Disaster within their jurisdictions and the responsibility to request a state declaration if appropriate.
- ❖ County and City Commissions and Councils have the authority to enter into mutual aid agreements between their jurisdictions and other jurisdictions.
- ❖ MCA [10-3-104](#) and [10-3-406](#) give the Governor and local chief elected officials the authority to “*direct and compel the evacuation of all or part of the population from an emergency or disaster area.....when necessary for the preservation of life or other disaster mitigation, response, or recovery;*” and to “*control the ingress and egress to and from an emergency or disaster area, the movement of persons within the area, and the occupancy of premises therein.*”
- ❖ Law Enforcement has the authority to order evacuations and close roads in emergent circumstances.
- ❖ City officials have the authority to condemn a building in the city as unsafe to occupy.
- ❖ The MT Dept. of Transportation (MDT) and the Federal Highway Administration have the authority to close state and federal highways and bridge structures.
- ❖ The County and City Public Works Departments have authority to close streets and bridges within their jurisdictions.
- ❖ The County Health Officer has broad authority over matters of public health to include air and water quality concerns, food supplies, wastewater systems, and disease prevention.
- ❖ The County Coroner’s Office is the lead agency for the collection, storage, and disposition of all human remains and their personal effects.
- ❖ During and after a volcanic ash emergency, emergency response resources should be primarily devoted to immediate life safety actions and the recovery of public infrastructure including roads, streets, and public facilities/utilities.
- ❖ As much as possible, all agencies and organizations involved in the execution of this annex should be organized, equipped, and trained to perform all designated and implied responsibilities contained in this annex and its implementing instructions for both response and recovery operations.
- ❖ All organizations are responsible for the development and maintenance of their own internal operating and notification procedures/guidelines. No part of this annex is intended to supplant agency SOP/SOGs.
- ❖ All organizations are responsible for filling any important vacancies; recalling personnel from leave, if appropriate; and, alerting those who are absent due to other duties or assignments.
- ❖ Personnel designated as on-scene responders or representatives to the EOC should make prior arrangements to ensure that their families are provided for in the event of an emergency, so to ensure a prompt, worry-free response and subsequent duty.

## 2.0 Situation & Assumptions

### 2.1 Situation

- ❖ The volcanic eruption of Mt. St. Helens on May 18, 1980, as well as continuing volcanic and seismic activity in places as nearby as Yellowstone National Park has made the threat of future volcanic eruptions that could affect Montana and Lewis & Clark County a reality. With proper wind currents, a major eruption on either Mt. St. Helens or Mt. Hood could cause a sizeable amount of ash to fall in our area and create a significant threat to the health and safety of every citizen in the County.
- ❖ Volcanic ash is pulverized rock. It often contains small pieces of light, expanded lava called pumice or cinders. Although gases are usually too diluted to constitute danger to the average person, the combination of acidic gas and ash which may be present within many miles of an eruption could cause lung damage to small infants, the very old and infirmed, or those already suffering from severe respiratory illness.
- ❖ Volcanic eruptions are often accompanied by seismic activity and electrical storms. Responding to and recovering from such an incident would require a concerted effort on the part of the county and all of its emergency response agencies.

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### 2.2 Assumptions

- ❖ Emergencies and disasters may occur without warning at any time of day or night, and may cause mass casualties.
- ❖ Normal, existing communications systems should be used unless interrupted; then any means available should be employed to reestablish communications.
- ❖ The DESC will endeavor to provide as much advanced notice as possible to allow all emergency response personnel and appropriate agency personnel to ensure the safety of their immediate families prior to departing for their duty assignments.
- ❖ An Incident Command System (ICS) in accordance with the National Incident Management System (NIMS) should ensure that the appropriate response leader will assume proper command of all response groups without the questioning of that individual's authority.
- ❖ Heavy ash fall may create both air and water quality issues. Vehicles, HVAC systems, water treatment facilities, reservoirs, lakes and streams may all be impacted.
- ❖ Broken down vehicles may be abandoned on roadways and travelling motorists may be forced seek shelter locally.
- ❖ Road and rail transportation into and out of the County may be hampered to the point of affecting commerce and local stocks of food, fuel, and other supplies.
- ❖ Both response and recovery operations may be hampered by debris blocked roads, damaged roads or bridges, and downed trees. It may take hours or even days before response personnel reach all affected areas.
- ❖ The need for increased security may exist.
- ❖ Demand for resources may be critical.
- ❖ Enhanced public awareness via techniques such as citizen handouts, ad campaigns, evacuation routes and mapping information may be helpful.
- ❖ There may be a need to assess advanced evacuation/closing of affected areas including business/industries, public parks, and local campgrounds, etc.
- ❖ Advance preparation by health care facilities, businesses, industries, and utilities in affected areas is essential to maintain needed services during response and recovery operations.
- ❖ Severe economic consequences may result from an extended loss of electrical power, water and sanitation systems, natural gas service, or a combination of these. The inability to open businesses, provide fuel or natural gas, prepare food, provide clean water, and maintain sanitation may immediately and seriously impact hospitals, business, schools, and adult care facilities.

## 3.0 Concept of Operations

### 3.1 General

- ❖ Response agencies in Lewis and Clark County have committed to using the Incident Command System for all significant incidents. Following a volcanic ash incident with widespread damage or debris, a Unified Command may be established among agencies or affected neighboring jurisdictions in order to assure more efficient management of scarce resources. In this event, the local Command and General Staff may even co-locate with other neighboring jurisdictions in the best surviving facility. On-scene control may be delegated to the Operations Section Chief or to an on-scene Incident Commander in the event of multiple incident sites.
- ❖ The IC/UC should establish an Incident Command Post (ICP) as soon as possible and ensure that the location of the ICP and identity of the IC(s) is disseminated to all responders.
- ❖ The IC/UC should adapt the management structure to reflect the need and complexity of the incident. In accordance with other annexes, this may include, but is not limited to activating the EOC, establishing unified command, and requesting mutual aid support from neighboring jurisdictions.

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- ❖ Continuity of operations and continuity of government may be essential. (see [COOP/COG Support Annex](#))
- ❖ Once appointed, the Public Information Officer (PIO) will be responsible for public coordination and dissemination during the emergency and should clear all press releases through the Incident Commander or DESC. All approved press releases should be logged and a copy saved for the disaster records.
- ❖ During the aftermath, the PIO, in conjunction with the IC, should continue to provide pertinent information to the media and public as able. The public should be reminded to remain calm, stay tuned for more information, and to follow the instructions of emergency management personnel. Such instruction may include guidelines for returning to homes, shelter accommodations, sanitation, and where and how to report damages.
- ❖ The PIO may also participate in a Joint Information Center (JIC), staffed by PIOs from various jurisdictions, to address the media with a single, coordinated voice.
- ❖ Information of greatest public interest may include, but is not limited to; road closures, medical care issues, availability of hospitals and healthcare facilities, traffic management, security for affected areas, shelter locations, food and water quality, availability of ice, food and water, search and rescue efforts, insurance issues, power outages and telephone service.
- ❖ Public Information lines may be activated at the EOC to receive information from the public, such as damage reports, sanitation problems, health issues, offers for donated goods, and other public safety-related problems.
- ❖ An immediate damage assessment should be made by all emergency response agencies and departments to determine their ability to respond, the availability of emergency responders and the status of each agency's station and equipment that would be required to conduct emergency response operations.
- ❖ Requests for mutual aid should be coordinated through the EOC, since more than one agency or municipality may be requesting mutual aid from the same agency or county. Allocation of resources should be made based on life safety, incident stabilization and preservation of important property.
- ❖ A Disaster Declaration may be obtained from the City & County Commissions/Council.
- ❖ A curfew may be imposed to improve safety and security in the affected area(s).

### **Emergency Operations Center (EOC)**

(See the [EOC Annex](#) for more information)

- ❖ The EOC should be immediately activated either in its present location or in an alternate facility depending on the stability and safety of the present facility. It is essential that the primary EOC staff and volunteers report to the EOC as soon as possible.
- ❖ The EOC may provide support to the Incident Commander(s) in such areas as evacuation, communications, transportation, shelter, information management and resource support.
- ❖ A situation map should be maintained by the Planning Section in the EOC to illustrate the affected areas and any other pertinent information such as fires, flooding, impassable roads and alternate response routes.
- ❖ ARES may provide emergency communications from the EOC to wherever requested in the field and for other agencies, such as the ARC.
- ❖ Contact with the State Emergency Coordination Center (SECC) should be established by any means available and as soon as possible.

### **Damage Assessment & Incident Stabilization**

Damage assessment usually takes place in two phases: 1) an initial assessment, to determine general impact and damage to vital facilities and resources, and provide a brief overview of impact on citizens and businesses; and 2) subsequent, in-depth, assessments to determine the full extent of damage and the financial implications for disaster declarations and disaster assistance. Priorities in the initial assessment are generally the restoration of emergency response and direction and control capability, and the saving of lives. (see [Damage Assessment Support Annex](#))

In an incident requiring damage assessment, a *Damage Assessment Group* may be organized under the Operations Section. The initial assessment should take place under the direction of the *Damage Assessment Group*, with assistance from the *Planning Section/Situation Unit* as needed. Priorities in the second phase should be to estimate

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damages, restore public services and facilitate disaster assistance. The *Finance Section* may also provide assistance in Phase two assessments (cost analysis, budgeting etc.) The County does not have the resources to restore private residences, businesses, or utilities and should refer these people to Public and Individual Assistance programs as appropriate.

### ❖ Initial Damage Assessment

- ◆ An aerial survey of the County should be performed as soon as safely possible. The Civil Air Patrol, US Forest Service, MT Highway Patrol, MTDNRC, and a number of public and private resources may be utilized. The results of this survey may then be used to facilitate more focused damage assessment on the ground.
- ◆ Local building officials should direct damage assessment on vital facilities according to their assigned Branch.
- ◆ The initial damage assessment should be augmented by "windshield" surveys and citizen reports, in order to provide an estimate of numbers of private homes and businesses affected.
- ◆ This survey should be completed as soon as possible, since it will provide the supporting documentation for a disaster declaration, and establish a base for the secondary assessment process.
- ◆ An assessment of damage to utilities, and evaluation of the immediate needs of the population, especially water and sanitation services, should be accomplished as soon as possible.
- ◆ Potable water is a major concern following a disaster. Power and gas for heating may also be extremely important, depending upon the season.

### ❖ Secondary Assessment

- ◆ The EOC Finance Section should begin gathering dollar figures associated with the damage to support requests for disaster declarations and assistance. Resources and facilities, which will be vital to the economic recovery of the County, should be surveyed. These include all hospitals, schools, financial institutions, and major employers.

## **Debris Removal**

Removal of ash/debris from public roads/highways is the responsibility of the agency that is responsible for its maintenance. Removal of debris from private property is the responsibility of the property owner. (see [Debris Management Annex](#))

## **Environmental Protection**

The Health Department should take the lead in issues of sanitation, potable water supply and disease prevention. It must be assumed that municipal water sources may be disrupted with the potential for contamination of drinking water. Food supplies may be compromised by contamination or lack of power. Refuse could accumulate to create harborage for insects, rodents and other disease carrying vectors.

## **Shelter and Family Referral Services**

If temporary lodging is needed, the ARC may activate and manage shelter operations as they are able. It is critical that all relief efforts to shelter and feed citizens are a coordinated effort between the Red Cross and all affected communities. The EOC is the logical broker for this communication.

The Salvation Army may also be requested to provide shelters and mass feeding assistance. Salvation Army operations should be coordinated through the EOC and Red Cross to prevent duplication of effort. (also see ESF 6: [Mass Care Annex](#))

## **Public Information**

- ❖ See [ESF 15 Annex](#) in Section II.
- ❖ Once appointed, the Public Information Officer (PIO) will be responsible for public information coordination and dissemination during the emergency and should clear all press releases through the Incident Commander or Unified Command.

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- ❖ All approved press releases should be logged and a copy saved for the disaster records.
- ❖ The EAS and target notification will be used when appropriate. Route information should be called in to the radio and TV stations, if time permits.
- ❖ The PIO, in conjunction with Unified Command, should try to provide pertinent information over radio, TV and the internet. The public should be reminded to remain calm, stay tuned for more information, and to follow the instructions of emergency management personnel and to begin the following precautionary measures:
  - ◆ Clean private culverts and drainage facilities on your property.
  - ◆ Be prepared to be self-sufficient for a minimum of 72 hours:
    - Have a food supply that requires little or no cooking and no refrigeration because electric power may be interrupted.
    - Keep a portable radio, emergency cooking equipment, lights and flashlights in working order.
    - Keep first aid and critical medical supplies (prescriptions, insulin, etc.) on hand.
- ❖ Further instruction may include guidelines for ash removal and disposal, the use of masks to protect the respiratory system, how to keep vehicles running, turning to homes, shelter accommodations, sanitation, and where and how to report damages.

### 3.2 Notifications

- ❖ Montana will be warned of an eruption through the National Warning System (NAWAS) from the National Warning Center in Colorado Springs. The MT Dept. of Justice is the state warning point and will disseminate the NAWAS alert to local law enforcement. The message will announce the estimated time of arrival of the ash.
- ❖ Warning the people within the risk area will normally be directed by the Emergency Operations Center using the Emergency Alert System (EAS), target notification, public address systems, or door-to-door notification as required by the situation.
- ❖ The DESC or his deputy activates the EAS by contacting the **NWS (453-4561 / 2081)** to initiate the message. If phones are down, a message may be hand delivered to the primary EAS station, KMTX, at 516 Fuller Ave. Radio and TV stations should copy the message and interrupt regular programming for the broadcast.
- ❖ Eruptions may occur without warning. Follow-up confirmation will likely be received first through the 911 center and the media. The jurisdiction will also be inundated by the public with information on damage and life/safety concerns. The IAP must address facilitating and verifying those reports and requests.
- ❖ Notification to all appropriate response agencies will normally be done by the Dispatch Center or the DESC who maintains a list with 24-hour telephone contact points of appropriate Federal, State, County and private agencies, businesses or individuals who can support emergency response or recovery operations.
- ❖ The County DESC will endeavor to provide as much advanced notice as possible to allow all emergency response personnel and appropriate County agency personnel to ensure the safety of their immediate families prior to departing for their duty assignments.
- ❖ Normal, existing communications systems should be used unless interrupted; then any means should be employed to reestablish communications. If communications are down, the most logical source of communications will be the local ARES organization, which is able to provide portable and self-sustained Ham radio communication that can link critical sites such as the EOC, shelters, hospitals and others that may be needed.

### 3.3 Preparedness

- ❖ Lewis & Clark County strongly encourages personal, family, and business emergency preparedness plans. During and after a damage producing incident, emergency response resources will be primarily devoted to immediate life safety actions, incident stabilization, and the protection/ recovery of public infrastructure including roads, streets, and other public facilities/utilities. Businesses and many families may be on their own for many hours.

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- ❖ Business and private property owners need to plan for specific insurance coverage for structures and contents before an emergency occurs. Likewise, personal and family emergency plans should include food, water, prescription medicine, and heating and shelter support for at least 72 hours, if not longer.
- ❖ Enhance public education on relevant topics—understanding of volcanic eruption warning systems, home safety, personal preparedness checklists, evacuation routes, pre- and post incident safety procedures/guidelines.
- ❖ Review, exercise and re-evaluate emergency plans, policies and procedures/guidelines.
- ❖ Review shelter availability.
- ❖ Review resource lists (including private contractors) and availability of road-clearing equipment, four-wheel-drive vehicles, emergency generators, fuel, chainsaws, etc.
- ❖ Ensure that basic procedures/guidelines are in place for rapid procurement of services, equipment and supplies.
- ❖ Pre-position equipment such as two-way radios, debris-clearing equipment, generators, light sets, fuels, food, cots, blankets, etc.
- ❖ Testing of equipment, e.g., FAX machines, telephones, copiers and especially generators under full load. Generators should be capable of functioning for several days with adequate fuel and fuel resupply.
- ❖ Implement a public education campaign regarding the importance of having a family disaster plan and 72-hour preparedness kit.
- ❖ Prepare scripts covering shelter-in-place or evacuation as applicable. Provide shelter-in-place instructions or evacuation maps as appropriate. Include release instructions for media.
- ❖ Prepare radio messages for use by local radio stations during emergency broadcasts.
- ❖ Have personnel participate in necessary training and exercises.
- ❖ Ensure that equipment and personnel resource lists and resources (e.g., heavy equipment) are current.
- ❖ Test and maintain response and communications equipment and after-hours personnel contact information.
- ❖ Keep a stock of necessary response supplies.
- ❖ Familiarize staff with requirements for requesting state and federal disaster assistance.
- ❖ Identify and review local contractor lists to see who may provide support specific to volcanic eruption response. Make initial contact with providers to verify availability.
- ❖ Review, revise, and, where necessary, establish mutual aid agreements with other jurisdictional agencies and private contractors relative to necessary response.

### 3.4 Response

- ❖ Activate and staff the EOC when volcanic ash poses a significant threat to the County. Staffing levels may vary with the complexity and needs of the response.
- ❖ Implement plans and procedures/guidelines.
- ❖ Establish an ICS or Area Command to manage the situation and response. For larger events that cross multiple jurisdictions, consider establishing a Unified Command with neighboring jurisdictions.
- ❖ Estimate emergency staffing levels and request personnel support.
- ❖ Notify supporting agencies through applicable ESFs as well as appropriate officials.
- ❖ Identify local, state, and federal agencies/entities that may be able to mobilize resources to support local response efforts.
- ❖ Determine the type, scope, and extent of the incident (recurring). Verify reports and obtain estimates of the area that may be affected.
- ❖ Notify command staff, support agencies, adjacent jurisdictions, ESF leads/coordinators, and liaisons of any situational changes.

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- ❖ After immediate lifesaving needs have been met, the recommended response priorities within the first 72-hours are:
  - ◆ Establish centralized communications to coordinate response and recovery efforts to determine the extent of the damage.
  - ◆ Conduct preliminary damage assessment of critical infrastructure (hospitals, roads, bridges, rail lines, schools, shelters, aviation facilities and government facilities) to determine the structural safety of facilities in order to provide basic necessities in the affected area(s).
  - ◆ Search and rescue.
  - ◆ Providing medical care to victims and the transporting of seriously injured to the appropriate medical facilities.
  - ◆ Directing firefighting efforts to the most essential facilities and controlling the spread of fires.
  - ◆ Providing basic mass care (food, water and shelter).
  - ◆ Inspecting and evaluating the level of hazardous material release and the impact on the general public.
  - ◆ Providing for the safety of citizens.
  - ◆ Providing accurate, consistent and expedient emergency public information to the public.
- ❖ Develop and initiate shift rotation plans, including briefing of replacements during shift changes. Dedicate time during each shift to preparing for shift-change briefings.
- ❖ Confirm or establish communications links between jurisdictional EOCs including those at the county and state levels. Confirm operable telephone numbers and verify functionality of alternate communications resources.
- ❖ Obtain current and forecasted weather to project potential impact on response and recovery operations (recurring).
- ❖ Determine the need to conduct sheltering or evacuation activities (recurring). Evacuation activities should be coordinated among multiple ESFs.
- ❖ Determine the need for additional resources and request as necessary through appropriate channels (recurring).
- ❖ Submit a request for an emergency declaration, as applicable.
- ❖ Consider activating mutual aid agreements as conditions dictate. Make initial contact with mutual aid agreement partners. Place backup personnel teams on standby and alert resource suppliers of potential and current needs.
- ❖ Coordinate resource access, deployment, and storage in the operational area including equipment, personnel, facilities, supplies, procedures, and communications. Track resources as they are dispatched and/or used.
- ❖ Develop plans and procedures/guidelines for registering mutual aid and other first responders as they arrive on the scene and receive deployment orders.
- ❖ Establish a Joint Information Center (JIC) or coordinate with JIC(s) established by other jurisdictions. Staff JIC(s) with appropriate Public Information Officers (PIOs) as required.
- ❖ Formulate emergency public information messages and media responses using “one message, many voices” concepts (recurring). Message content may include expected impacts of the severe weather, expected duration, instructions for public protection, and planned activities to address the emergency.
- ❖ Record EOC and individual personnel activities (recurring). All assignments, persons responsible, and actions taken should be documented in logbooks.
- ❖ Record all incoming and outgoing messages (recurring). All messages and the person sending or receiving them should be documented as part of the EOC log.
- ❖ Develop situation reports (recurring). At regular intervals, the EOC Manager and staff should assemble a situation report.
- ❖ Develop and update the Incident Action Plan (IAP) (recurring). The IAP should be discussed at regular intervals and modified as the situation changes.

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- ❖ Coordinate with private-sector partners as needed.
- ❖ Ensure that reports of injuries, deaths, and major equipment damage accrued during response activities are communicated to the IC.

### 3.5 Recovery

- ❖ Monitor secondary hazards associated with volcanic eruptions (e.g., landslides, contamination, damage to bridges/roads, impacts to utility lines/facilities) and maintain on-call personnel to support potential response to these types of hazards.
- ❖ Ensure an orderly demobilization of emergency operations in accordance with current demobilization plans.
- ❖ Once the threat to public safety is eliminated, conduct cleanup and recovery operations.
- ❖ Conduct damage assessment activities.
- ❖ Conduct debris removal activities.
- ❖ Restore essential services as needed.
- ❖ Activate if necessary appropriate recovery strategies, continuity of operations plans, and/or continuity of government plans.
- ❖ Release mutual aid resources as soon as possible.
- ❖ Continue EOC operations until it is determined that EOC coordination is no longer necessary.
- ❖ Provide public information regarding safe re-entry to damaged areas.
- ❖ Coordinate with ESF 14 for Individual Assistance.
- ❖ Conduct a post-event debriefing to identify success stories, opportunities for improvement, and development of the After Action Report/Improvement Plan (AAR/IP).
- ❖ Updates plans and procedures/guidelines based on critiques and lessons learned during an actual event.

### 3.6 Mitigation

- ❖ Keep Emergency Action Plans current.
- ❖ Survey and install utility shut-off valves at all government buildings and schools.
- ❖ Exercise Emergency Actions Plan every five years.

## 4.0 Organization & Responsibilities

### 4.1 Organization

- ❖ Incident Command
  - ◆ **Response:** The affected jurisdiction's senior **Law Enforcement** official or designee.  
\*Unified Command (*suggested*): LE, Fire, PW, PH.
  - ◆ **Recovery:** Senior **Public Works** official or designee.  
\*Unified Command (*suggested*): PW, PH, NGOs
- ❖ The EOC may be activated to monitor a potential emergency situation or to respond to or recover from a significant event that is occurring or has occurred. Recommended staffing may include:
  - ◆ DES coordinator and deputy(s).
  - ◆ At least one county commissioner.
  - ◆ Law enforcement representative(s).
  - ◆ Public Works representative(s).

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- ◆ Public Health representative(s).
- ◆ Fire representative(s).
- ◆ National Guard liaison officer (if the Guard is activated). The National Guard may be activated by a request from the county commissioners to the administrator of the MT DES (406-324-4777 24/7). The county must first exhaust its resources before a request for Guard assistance will be honored. Once the Guard is activated, all requests for its assistance should be made through the Guard liaison officer in the EOC.
- ❖ When activated, the EOC provides support to the Incident Commander(s) in such areas as evacuation, communications, transportation, and shelter coordination.

### 4.2 Responsibilities

#### Coordinating Agency (LCCO DES)

- ❖ Give assistance and guidance to agencies & departments in the development of response plans.
- ❖ Assist in the development of pre-scripted warning messages and Special News Advisories.
- ❖ Provide awareness education to county employees and to the public.
- ❖ Monitor conditions prior to and during volcanic eruption events particularly with respect to evacuation.
- ❖ Coordinate ash fall warnings and preparation actions.
- ❖ Operate the EOC at the appropriate level, maintain a chronological log of incident events, and coordinate for resources.
- ❖ Provide County PIO with information for media releases. Provide public information if the PIO is not available.
- ❖ Coordinate with the Red Cross for any sheltering needs.
- ❖ Help coordinate recovery actions.
- ❖ Manage the process for collection of damage assessments, document and report recovery actions, and coordinate with Montana DES.
- ❖ Hold periodic briefings when necessary for the EOC staff to exchange information.
- ❖ Coordinate available resources; maintain detailed records of all fiscal and other resources committed and/or expended.
- ❖ Notify Montana DES if it appears State or Federal assistance may be necessary.
- ❖ Participate in incident related conference calls.

#### Cooperating Agencies

##### **ALL**

- ❖ Report any phenomenon that merit warning local officials or the public to the 911 Dispatch Center.
- ❖ When requested, provide personnel and equipment to assist in route alerting or door-to-door warnings, SAR missions, debris cleanup and other duties as specified by the requesting authority.
- ❖ Provide a representative to the EOC during the response and recovery phases.
- ❖ Implement continuity of operations (COOP) plans
- ❖ Document costs for reimbursement and auditing purposes.
- ❖ Evaluate and review procedures/guidelines to ensure operational readiness.
- ❖ Assist in identifying personnel and resources to support this Annex.
- ❖ Work with LCCO DES to keep this Annex up-to-date.

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### **911 Dispatch Center (ESF 2)**

- ❖ Receive and, if necessary, verify and acknowledge advisories, watches and warnings.
- ❖ Make notification to local officials concerning dangerous phenomena or conditions that could cause such situations as required.
- ❖ In accordance with SOP/SOG's or when directed, activate the necessary warning system(s) to alert and provide instructions to all departments and to the public.
- ❖ Identify requirements for route alerting and door-to-door warnings for areas where other warning systems do not adequately reach the public.
- ❖ Develop and maintain hazard specific warning procedures/guidelines covering warning receipt, verification, and dissemination.

### **American Red Cross (ARC) (ESF 6)**

- ❖ Provides shelters, feeding, and mass casualty assistance in accordance with established SOP/SOGs and ability.
- ❖ Conduct a windshield damage survey within the first 24 hours.

### **Chief Elected Officials (ESF 5)**

- ❖ Declare an emergency and/or a disaster with up to a 2-mill levy, if appropriate. Separate declarations are required for each affected jurisdiction (county, Helena, East Helena.) A disaster declaration will allow a request to the MTDES for assistance.

### **City/County Health Department (ESF 8)**

- ❖ Provide public health information and education concerning the effects of volcanic ash.
- ❖ Coordinate air quality (AQ) monitoring.
- ❖ Inspect food and water supplies if necessary.
- ❖ Identify sources of safe drinking water.
- ❖ Develop emergency public health regulations and orders such as boil orders.
- ❖ Monitor the County for signs of water/food related infection or illness.
- ❖ Inspect shelters for sanitary conditions, including food and water supplies, wastewater and garbage disposal.
- ❖ Conduct damage assessment in licensed food facilities for contamination and refrigeration failures.
- ❖ Provide information on possible sewage contamination, identifying sources for portable toilets when needed, and providing information on appropriate clean-up.

### **Coroner's Office**

- ❖ Serve as the lead agency for the collection, storage, and disposition of all human remains and their personal effects.

### **Fire Services (ESF 4)**

- ❖ Establish a station checklist that includes the stockage, inventory and/or testing of fuel, food, potable water, medical supplies, rescue equipment, chain saws, emergency generators, batteries, communications systems, vehicles, etc.
- ❖ Review and prepare for mass casualty procedures/guidelines.
- ❖ Establish liaison with Public Works to ensure mutual support.
- ❖ Provide units and personnel for route alerting and door-to-door warnings when requested.
- ❖ Fight fires, rescue victims, respond to hazmat incidents, provide emergency medical services and assist with damage assessment.
- ❖ Activate technical rescue teams as appropriate to the event.
- ❖ Assist with evacuations.
- ❖ Assist with SAR missions.

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### Law Enforcement (ESF 13)

- ❖ Provide units and personnel for route alerting and door-to-door warnings when requested.
- ❖ Assist with evacuations.
- ❖ Coordinate SAR missions.
- ❖ Provide security to evacuated areas.
- ❖ Close roads as needed and establish evacuation routes. Provide alternate routing plans.
- ❖ Coordinate road closure and debris information with Public Works. Emphasize reporting of debris and blocked roads, power outages, power lines, and possible electrical and fire hazards.

### Public Works (ESF 3)

- ❖ Establish an agency checklist that includes the stockage, inventory and/or testing of all equipment and facilities. Special attention should be provided to fuel, potable water, chain saws, emergency generators, batteries, communications systems, vehicles, etc.
- ❖ Assist in conducting damage assessments in the aftermath of an incident. Coordinate with Incident Command to inspect priority buildings first, which are essential service, hospitals, nursing homes, and shelters. Damage assessment should be reported to the EOC. See the [Damage Assessment Annex](#) for more information.
- ❖ Assess the volcanic activity with respect to wind forecasts, ash volume expected, and damage to vehicles, the water supply, utility distribution systems, catch basins, storm drains and roadways. Keep EOC advised.
- ❖ Assess damage to bridges, streets, government buildings, dams, and containment ponds.
- ❖ Provide information on road situations to include open/closed data, bridge status and general damage.
- ❖ Oversee the repair and restoration of key facilities and systems and removal of debris.
- ❖ Coordinate debris removal, with an emphasis on roads that need to be cleared for emergency traffic.
- ❖ Assist with restoration of basic services. Repairs to water and sewer mains, streets and bridges should be made in order of priority.
- ❖ Assist LE with traffic control with the use of barriers and signs.
- ❖ Identify contractors who can provide heavy and specialized equipment support during emergencies and individuals and businesses that may lease equipment during emergencies.
- ❖ Closely document all emergency work under an assigned unique work order including equipment and materials used, fuel consumed, worker overtime, tipping fees and number or volume of debris loads.

### Utilities:

- ❖ Assess damages and facilitate restoration of services.

### Montana Disaster & Emergency Services (DES)

- ❖ Coordinate assistance to local government and mobilization of resources per the provisions of the [Montana Emergency Response Framework](#).

### Federal Emergency Management Agency (FEMA)

- ❖ Administers assistance to the state pursuant to [PL 93-288 of the Disaster Relief Act of 1974, Section 417](#), when threat would constitute a major disaster.

## Considerations and Implementation Responsibilities

As demonstrated by the 1980 eruption of Mt. St. Helens, ash can cause flooding, mudslides, equipment failure, and respiratory health problems, as well as a huge ash removal project. The following are some considerations when planning for a Volcanic Ash Incident.

### Ash Removal

If ash build up is such that it impairs traffic flow, response capability, endangers the environment, or the aesthetics of public property, the jurisdiction will give consideration to a removal process. Collection points may need to be set up pending determination of a final disposal location. (see [Debris Management Annex](#))

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### Damage Assessment & Incident Stabilization:

Damage assessment may take place in two phases: 1) the initial assessment, to determine general impact and damage to vital facilities and resources, and provide a brief overview of impact on citizens and businesses; and 2) subsequent, in-depth, assessments to determine the full extent of damage and the financial implications for disaster declarations and disaster assistance. Priorities in the initial assessment will be the restoration of emergency response and direction and control capability, and the saving of lives. (see [Damage Assessment Annex](#))

### Disruption of Water Supply

Should a volcanic eruption cause a disruption in the water supply, Public Works may attempt to provide some water. The water system has connections and agreements in place for emergency purposes. It may be necessary to procure alternative supplies through the use of potable water tankers, and/or order mandatory reductions in use. The EOC may have to request emergency supplies through the State DES or National Guard.

### Earthquakes

Volcanic activity enhances the probability of an earthquake. If volcanic eruption occurs, it would be prudent to monitor seismic activity and keep in mind the threat of earthquake when planning.

### Electrical Storms

Electrical storms, an associated phenomenon of a volcanic plume, can cause fires as well as power outages. Depending on the time of year, the effect could be devastating. Either could require shelter and mass care be provided to a portion of our population. (See [Mass Care Annex](#)).

### Equipment Failure

Mechanized equipment could easily fail due to ash clogging air and fuel filters. Non-operative emergency vehicles and other equipment could greatly impair response capability. Also, roads could become impassable with ash and broken down private vehicles further impairing response capability.

### Power Outages

Northwestern Energy will provide response to the loss of commercial power. Auxiliary power capabilities exist at the Law Enforcement Center, the Civic Center, and both hospitals. Public Works also has access to portable generators.

### Respiratory Health Problems

Ash particles in the air can aggravate existing respiratory problems and cause problems for others. The EOC will cooperate with public health officials to disseminate regular warning information to the public and implement appropriate precautions for emergency workers and assisting agencies and volunteers. Health warning hotlines may be established to provide the most up-to-date information.

## 5.0 Authorities and References

### 5.1 Authorities

❖ See [Section 5.1](#) of Basic Plan.

### 5.2 References

❖ See [Section 5.2](#) of Basic Plan.

❖ **Lewis and Clark County, Montana. November, 2005.** EOP Section III, Hazard Specific Annexes, Annex 10 – Volcanic Ash.

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### Attachment 1: Acronyms

Acronym	Meaning
AAR/IP	After Action Report/Improvement Plan
ARC	American Red Cross
ARES	Amateur Radio Emergency Services
CAP	Civil Air Patrol
CBO	Community Based Organization
CCRC	Capitol City Radio Club
CEO	Chief Executive Officer ( <i>also Chief Elected Official</i> )
CERT	Community Emergency Response Team
CHO	County Health Officer
COOP/COG	Continuity of Operations/Government
DES	Disaster And Emergency Services
DESC	DES Coordinator
DNRC	Dept. of Natural Resources & Conservation (Montana)
DPHHS	Dept. of Public Health & Human Services
EAS	Emergency Alert System
EMS	Emergency Medical Services
EOC	Emergency Operations Center
ESF	Emergency Support Function
FBO	Faith Based Organization
FEMA	Federal Emergency Management Agency
HVAC	Heating, Ventilation, Air Conditioning
IAP	Incident Action Plan
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
JIC	Joint Information Center
LCCO	Lewis & Clark County
LE	Law Enforcement
LEPC	Local Emergency Planning Committee
MCA	Montana Code Annotated
MDT	Montana Department of Transportation
MTDEQ	Montana Department of Environmental Quality
MTDES	Montana Disaster & Emergency Services
NAWAS	National Attack Warning System
NGO	Non Governmental Organization
NIMS	National Incident Management System
NWS	National Weather Service
P.L.	Public Law
PH	Public Health
PIO	Public Information Officer

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Acronym	Meaning
PW	Public Works
SAR	Search & Rescue
SECC	State Emergency Coordination Center (MTDES)
SOP/SOG	Standard Operating Procedures/Guidelines
UC	Unified Command

**Attachment 2: Definitions**

None Identified

## Attachment 3: Sample EAS Messages

### EAS Message #1: Home Shelter

The following message has been released by the Emergency Operations Center:

1. The \_\_\_\_\_ has announced that an emergency presently exists at \_\_\_\_\_. Persons living or working within an approximate \_\_\_\_\_ mile radius of this location are requested to take sheltering actions.
2. There is no need for residents to leave the area in order to take sheltering action.
3. Persons who have taken shelter should observe the following procedures/guidelines:
  - a. Close all doors and windows.
  - b. Disconnect air conditioners or fans.
  - c. Lower the thermostat setting of any heater or turn off air conditioner/evaporative cooler to minimize the intake of external air.
  - d. Keep pets inside, and to extent possible, bring farm animals under covered facilities.
4. People living, working or traveling in the following areas are affected by this request:  
(Repeat the list of areas one time, and then continue the message.)
5. Persons living, working or traveling in this area should take sheltering action. Persons traveling to home or work should proceed to their destination in an orderly fashion obeying all traffic regulations. Non-residents traveling in motor vehicles should clear the area in an orderly fashion.
6. All persons traveling in the area in motor vehicles should roll up windows, close air vents, and turn off air conditioners. If in an automobile, or when sheltering is not immediately available, improvised respiratory protection may be taken. Place a handkerchief, towel, or other similar item snugly over the nose and mouth until indoor.
7. You are asked **not** to do the following:  
(Read statement A., below, if school is in session.)
  - A. You are requested not to telephone or go to the school your children are attending. They are in a covered protected environment and will be bused home when it is safe to do so.
  - B. Do not telephone city, county, state or federal officials directly involved. They will keep you informed of the situation through this station. Do not use the telephone except for medical emergencies.
8. The preceding has been an announcement from the Lewis & Clark County Emergency Operations Center. It calls for all persons living or working within a \_\_\_\_\_ mile radius of \_\_\_\_\_ to take shelter. For further information, stay tuned to this station.

**(Thereafter, this message should be repeated as often as needed until the station is informed by the EOC to end transmission.)**

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### EAS Message #2: Evacuation

The following message has been released by the Emergency Operations Center:

1. The Lewis & Clark County Emergency Operations Center has announced that an emergency condition exists at \_\_\_\_\_ and recommends the evacuation of all persons living or working within an approximate \_\_\_\_\_ mile radius of this location.
2. This advisory affects persons living in the following area:  
(Repeat the list of affected areas one time, and then continue the message.)
3. Please use the following evacuation routes for your neighborhood. If you will need a place to stay, report to the mass care center located at \_\_\_\_\_.  
(Repeat the list of affected areas one time, and then continue the message.)
4. If you have housebound persons or invalids in your home and require assistance in moving them, contact the Lewis & Clark County Emergency Operations Center at \_\_\_\_\_
5. Please cooperate by checking on persons who may live alone in your neighborhood. If they have no way of providing for their own transportation, please assist them if possible.
6. Persons affected by this evacuation advisory should prepare to spend a minimum of three days (72 hours) away from home and should have with them sufficient quantities of clothing, sleeping bags or blankets, personal care items and prescription drugs for at least this period. Persons evacuating to mass care centers will be provided with food and sanitary facilities. Pets will **not** be allowed inside the mass care centers.
7. Farmers/ranchers affected by this evacuation advisory should shelter their animals and contact the County agricultural extension agent at \_\_\_\_\_ for further instructions regarding protection of livestock, foodstuffs, and regaining access to the evacuated area.
8. Persons planning to evacuate are reminded to take the following steps prior to leaving:
  - A. Secure your home and property.
  - B. Turn off all lights and electrical appliances.
  - C. Turn down any heating systems (or turn off air conditioning systems).
  - D. Proceed calmly to your destination, obeying all traffic laws and driving carefully.
  - E. Please obey law enforcement officers and others who will be directing traffic along the evacuation routes.
9. The preceding has been an announcement from the Lewis & Clark County Emergency Operations Center regarding recommendation by the \_\_\_\_\_ for the evacuation of all persons living within a \_\_\_\_\_ mile radius of \_\_\_\_\_. For further information, please stay tuned to this station.

**(Thereafter, this message should be repeated as often as needed until the station is informed by the EOC to end transmission.)**

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### EAS Message #3: School Evacuation

1. The following message has been released by the Lewis & Clark County Emergency Operations Center. It supplements instructions given to the public concerning the evacuation announcement for an approximate \_\_\_\_\_ mile radius of \_\_\_\_\_.
2. Parents with children attending schools within a \_\_\_\_\_ mile radius of \_\_\_\_\_ are advised that their children are subject to a separate evacuation plan while school is in session. These schools are \_\_\_\_\_. Children at these schools will be taken directly to shelter areas. Parents are to meet their children at these shelter areas outside the emergency zone. ***I repeat, children will be taken directly to areas outside the risk area where parents are to meet their children.*** Parents are not to report to their children's schools.
3. Children attending the schools in the risk area will be taken to the following areas where they may be picked up:  

<b><u>School:</u></b>	<b><u>Evacuation Area:</u></b>
-----------------------	--------------------------------

(Repeat list one time and continue the message.)
4. Parents are urged not to telephone or to go to the schools their children attend. To do so will only create confusion. Parents are to meet their children at the previously announced evacuation areas. ***I repeat***, parents are urged **not** to telephone or to go to the schools that their children attend, but to meet their children at the evacuation areas.
5. The preceding has been an announcement from the Lewis & Clark County Emergency Operations Center giving parents instructions on where to meet their children who are attending schools within an approximate \_\_\_\_\_ mile radius of \_\_\_\_\_.

(Repeat entire message one time.)

## Attachment 4: Sheltering-in-Place

### American Red Cross: Fact Sheet For Citizens

#### **What Shelter-in-Place Means:**

One of the instructions you may be given in an emergency where hazardous materials may have been released into the atmosphere is to shelter-in-place. This is a precaution aimed to keep you safe while remaining indoors. (This is not the same thing as going to a shelter in case of a storm.) Shelter-in-place means selecting a small, interior room, with no or few windows, and taking refuge there. It does not mean sealing off your entire home or office building. If you are told to shelter-in-place, follow the instructions provided in this Fact Sheet.

#### **Why You Might Need to Shelter-in-Place:**

Chemical, biological, or radiological contaminants may be released accidentally or intentionally into the environment. Should this occur, information will be provided by local authorities on television and radio stations on how to protect you and your family. Because information will most likely be provided on television and radio, it is important to keep a TV or radio on, even during the workday. The important thing is for you to follow instructions of local authorities and know what to do if they advise you to shelter-in-place.

#### **How to Shelter-in-Place**

##### **At Home:**

- Close and lock all windows and exterior doors.
- If you are told there is danger of explosion, close the window shades, blinds, or curtains.
- Turn off all fans, heating and air conditioning systems.
- Close the fireplace damper.
- Get your family [disaster supplies kit](#) and make sure the radio is working.
- Go to an interior room without windows that's above ground level. In the case of a chemical threat, an aboveground location is preferable because some chemicals are heavier than air, and may seep into basements even if the windows are closed.
- Bring your pets with you, and be sure to bring additional food and water supplies for them.
- It is ideal to have a hard-wired telephone in the room you select. Call your emergency contact and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.
- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door and any vents into the room.
- Keep listening to your radio or television until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

##### **At Work:**

- Close the business.
- Bring everyone into the room(s). Shut and lock the door(s).
- If there are customers, clients, or visitors in the building, provide for their safety by asking them to stay – not leave. When authorities provide directions to shelter-in-place, they want everyone to take those steps now, where they are, and not drive or walk outdoors.
- Unless there is an imminent threat, ask employees, customers, clients, and visitors to call their emergency contact to let them know where they are and that they are safe.
- Turn on call-forwarding or alternative telephone answering systems or services. If the business has voice mail or an automated attendant, change the recording to indicate that the business is closed, and that staff and visitors are remaining in the building until authorities advise it is safe to leave.

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- Close and lock all windows, exterior doors, and any other openings to the outside.
- If you are told there is danger of explosion, close the window shades, blinds, or curtains.
- Have employees familiar with your building's mechanical systems turn off all fans, heating and air conditioning systems. Some systems automatically provide for exchange of inside air with outside air – these systems, in particular, need to be turned off, sealed, or disabled.
- Gather essential disaster supplies, such as nonperishable food, bottled water, battery-powered radios, first aid supplies, flashlights, batteries, duct tape, plastic sheeting, and plastic garbage bags.
- Select interior room(s) above the ground floor, with the fewest windows or vents. The room(s) should have adequate space for everyone to be able to sit in. Avoid overcrowding by selecting several rooms if necessary. Large storage closets, utility rooms, pantries, copy and conference rooms without exterior windows will work well. Avoid selecting a room with mechanical equipment like ventilation blowers or pipes, because this equipment may not be able to be sealed from the outdoors.
- It is ideal to have a hard-wired telephone in the room(s) you select. Call emergency contacts and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.
- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door(s) and any vents into the room.
- Write down the names of everyone in the room, and call your business' designated emergency contact to report who is in the room with you, and their affiliation with your business (employee, visitor, client, customer.)
- Keep listening to the radio or television until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

### **At School:**

- Close the school. Activate the school's emergency plan. Follow reverse evacuation procedures to bring students, faculty, and staff indoors.
- If there are visitors in the building, provide for their safety by asking them to stay – not leave. When authorities provide directions to shelter-in-place, they want everyone to take those steps now, where they are, and not drive or walk outdoors.
- Provide for answering telephone inquiries from concerned parents by having at least one telephone with the school's listed telephone number available in the room selected to provide shelter for the school secretary, or person designated to answer these calls. This room should also be sealed. There should be a way to communicate among all rooms where people are sheltering-in-place in the school.
- Ideally, provide for a way to make announcements over the school-wide public address system from the room where the top school official takes shelter.
- If children have cell phones, allow them to use them to call a parent or guardian to let them know that they have been asked to remain in school until further notice, and that they are safe.
- If the school has voice mail or an automated attendant, change the recording to indicate that the school is closed, students and staff are remaining in the building until authorities advise that it is safe to leave.
- Provide directions to close and lock all windows, exterior doors, and any other openings to the outside.
- If you are told there is danger of explosion, direct that window shades, blinds, or curtains be closed.
- Have employees familiar with your building's mechanical systems turn off all fans, heating and air conditioning systems. Some systems automatically provide for exchange of inside air with outside air – these systems, in particular, need to be turned off, sealed, or disabled.
- Gather essential disaster supplies, such as nonperishable food, bottled water, battery-powered radios, first aid supplies, flashlights, batteries, duct tape, plastic sheeting, and plastic garbage bags.
- Select interior room(s) above the ground floor, with the fewest windows or vents. The room(s) should have adequate space for everyone to be able to sit in. Avoid overcrowding by selecting several rooms if necessary. Classrooms may be used if there are no windows or the windows are sealed and cannot be opened. Large storage closets, utility rooms, meeting rooms, and even a gymnasium without exterior windows will also work well.

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- It is ideal to have a hard-wired telephone in the room(s) you select. Call emergency contacts and have the phone available if you need to report a life-threatening condition. Cellular telephone equipment may be overwhelmed or damaged during an emergency.
- Bring everyone into the room. Shut and lock the door.
- Use duct tape and plastic sheeting (heavier than food wrap) to seal all cracks around the door(s) and any vents into the room.
- Write down the names of everyone in the room, and call your schools' designated emergency contact to report who is in the room with you.
- Listen for an official announcement from school officials via the public address system, and stay where you are until you are told all is safe or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community.

### **In Your Vehicle:**

If you are driving a vehicle and hear advice to “shelter-in-place” on the radio, take these steps:

- If you are very close to home, your office, or a public building, go there immediately and go inside. Follow the shelter-in-place recommendations for the place you pick described above.
- If you are unable to get to a home or building quickly and safely, then pull over to the side of the road. Stop your vehicle in the safest place possible. If it is sunny outside, it is preferable to stop under a bridge or in a shady spot, to avoid being overheated.
- Turn off the engine. Close windows and vents.
- If possible, seal the heating/air conditioning vents with duct tape.
- Listen to the radio regularly for updated advice and instructions.
- Stay where you are until you are told it is safe to get back on the road. Be aware that some roads may be closed or traffic detoured. Follow the directions of law enforcement officials.

**Local officials on the scene are the best source of information for your particular situation. Following their instructions during and after emergencies regarding sheltering, food, water, and cleanup methods is your safest choice.**

Remember that instructions to shelter-in-place are usually provided for durations of a few hours, not days or weeks. There is little danger that the room in which you are taking shelter will run out of oxygen and you will suffocate.

## Attachment 5: Volcanic Ash Information Sheet

### Hazard

The volcanic ash fallout in Montana from the May 18, 1980 eruption of Mount St. Helens and the threat of more eruptions, has demonstrated a need for contingency planning with respect to volcanic ash fallout. This eruption has proven that Montana can receive considerable amounts of volcanic ash from the West Coast. This constitutes a definite threat to the public health and safety of every citizen in the County.

### What Is Volcanic Ash?

Volcanic ash is pulverized rock. It often contains small pieces of light, expanded lava called pumice or cinders. Although gases are usually too diluted to constitute danger to the average person, the combination of acidic gas and ash which may be present within a few miles of the eruption could cause lung damage to small infants, the very old and infirmed, or those already suffering from severe respiratory illness.

### Effects Of Ash Fallout:

1. A heavy ash fall blots out light. Sudden heavy demand for electric light may cause power supplies to “brown out” or fail.
2. Ash clogs watercourses, reservoirs, sewers, and machinery of all kinds.
3. Ash drifts onto roadways, railways, and runways like snow but resemble soft wet sand.
4. Fire ash may be slippery.
5. The weight of ash may cause roofs to collapse, tree branches to break, and power lines to come down.

### Citizen Instruction If Volcanic Ash Is Falling:

1. Don't panic. Stay calm
2. Stay indoors.
3. If outside, seek shelter, (e.g. car, building) use a mask or dampened cloth over your mouth to breathe.
4. If at work, go home if possible, before the ash begins to fall. If the ash is falling stay indoors until the heavy ash has settled.
5. Go directly home, do not run errands.
6. Unless an emergency, do not use telephone
7. Use your radio for information

### If In Your Auto

1. Get vehicle inside, ash is abrasive.
2. Don't speed, and don't follow too closely behind other vehicles.
3. Change oil and filter right away, don't drive without an air filter.

## Attachment 6: What To Do If A Volcano Erupts

### Volcanic Ash fall - How to be Prepared for Ash fall

-- How to protect your home, car, children, and pets --

-- Washington State Military Department, Emergency Management Division, and the USGS Cascades Volcano Observatory, 1999

#### WHAT IS VOLCANIC ASH?

Volcanic ash is rock that has been pulverized into dust or sand by volcanic activity. In very large eruptions, ash is accompanied by rocks having the weight and density of hailstones. Volcanic ash is hot near the volcano, but it is cool when it falls at greater distances. Ash fall blocks sunlight, reducing visibility and sometimes causing darkness. Ash fall can be accompanied by lightning.

Fresh volcanic ash is gritty, abrasive, sometimes corrosive, and always unpleasant. Although ash is not highly toxic, it can trouble infants, the elderly and those with respiratory ailments. Small ash particles can abrade the front of the eye under windy and ashy conditions.

Ash abrades and jams machinery. It contaminates and clogs ventilation, water supplies and drains. Ash also causes electrical short circuits -- in transmission lines (especially when wet), in computers, and in microelectronic devices. Power often goes out during and after ash fall. Long-term exposure to wet ash can corrode metal.

Ash accumulates like heavy snowfall, but doesn't melt. The weight of ash can cause roofs to collapse. A one-inch layer of ash weighs 5-10 pounds per square foot when dry, but 10-15 pounds per square foot when wet. Wet ash is slippery. Ash resuspended by wind, and human activity can disrupt lives for months after an eruption.

#### WHAT TO DO IN CASE OF AN ASH FALL

##### GENERAL PRINCIPLES

- Know in advance what to expect and how to deal with it; that will make it manageable.
- In ashy areas, use dust masks and eye protection. If you don't have a dust mask, use a wet handkerchief.
- As much as possible, keep ash out of buildings, machinery, air and water supplies, downspouts, storm drains, etc.
- Stay indoors to minimize exposure -- especially if you have respiratory ailments.
- Minimize travel -- driving in ash is hazardous to you and your car.
- Don't tie up phone line with non-emergency calls.
- Use your radio for information on the ash fall.

#### WHAT TO DO BEFORE AN ASH FALL

Whether in a car, at home, at work or play, you should always be prepared. Intermittent ash fall and resuspension of ash on the ground may continue for years.

##### YOUR HOME

Keep these items in your home in case of any natural hazards emergency:

- Extra dust masks.
- Enough non-perishable food for at least three days.
- Enough drinking water for at least three days (one gallon per person per day).
- Plastic wrap (to keep ash out of electronics).
- First aid kit and regular medications.
- Battery-operated radio with extra batteries.
- Lanterns or flashlights with extra batteries.

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- Extra wood, if you have a fireplace or wood stove.
- Extra blankets and warm clothing.
- Cleaning supplies (broom, vacuum, shovels, etc.).
- Small amount of extra cash (ATM machines may not be working).

### YOUR CHILDREN

- Explain what a volcano is and what they should expect and do if ash falls.
- Know your school's emergency plan.
- Have quiet games and activities available.

### YOUR PETS

- Store extra food and drinking water.
- Keep extra medicine on hand.
- Keep your animals under cover, if possible.

### YOUR CAR

Any vehicle can be considered a movable, second home. Always carry a few items in your vehicle in case of delays, emergencies, or mechanical failures.

- Dust masks and eye protection.
- Blankets and extra clothing.
- Emergency food and drinking water.
- General emergency supplies: first aid kit, flashlight, fire extinguisher, tool kit, flares, matches, survival manual, etc.
- Waterproof tarp, heavy towrope.
- Extra air and oil filters, extra oil, windshield wiper blades and windshield washer fluid.
- Cell phone with extra battery.

## WHAT TO DO DURING AND AFTER AN ASH FALL

### YOUR HOME

- Close doors, windows and dampers. Place damp towels at door thresholds and other draft sources; tape drafty windows.
- Dampen ash in yard and streets to reduce resuspension.
- Put stoppers in the tops of your drainpipes (at the gutters).
- Protect dust sensitive electronics.
- Since most roofs cannot support more than four inches of wet ash, keep roofs free of thick accumulation. Once ash fall stops, sweep or shovel ash from roofs and gutters. Wear your dust mask and use precaution on ladders and roofs.
- Remove outdoor clothing before entering a building. Brush, shake and pre-soak ashy clothing before washing.
- If there is ash in your water, let it settle and then use the clear water. In rare cases where there is a lot of ash in the water supply, do not use your dishwasher or washing machine.
- You may eat vegetables from the garden, but wash them first.
- Dust often using vacuum attachments rather than dust cloths, which may become abrasive.
- Use battery operated radio to receive information.

### YOUR CHILDREN

- Follow school's directions for care of children at school.

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- Keep children indoors; discourage active play in dusty settings. Dust masks do not fit well on small children.

### **YOUR PETS**

- Keep pets indoors. If pets go out, brush or vacuum them before letting them indoors.
- Make sure livestock have clean food and water.
- Discourage active play in dusty settings.

### **YOUR CAR**

- If possible, do not drive; ash is harmful to vehicles.
- If you must drive, drive slowly, use headlights, and use ample windshield washer fluid.
- Change oil, oil filters, and air filters frequently (every 50 to 100 miles in heavy dust, i.e., less than 50 feet visibility; every 500 to 1,000 miles in light dust).
- Do not drive without an air filter. If you cannot change the air filter, clean it by blowing air through from the inside out.
- If car stalls or brakes fail, push car to the side of the road to avoid collisions. Stay with your car.

### **WHAT TO DO DURING THE CLEAN UP PERIOD**

- Minimize driving and other activities that resuspend ash.
- Remove as much ash as you can from frequently used areas. Clean from the top down. Wear a dust mask.
- Prior to sweeping, dampen ash to ease removal. Be careful to not wash ash into drainpipes, sewers, storm drains, etc.
- Use water sparingly. Widespread use of water for clean up may deplete public water supply.
- Maintain protection for dust-sensitive items (e.g., computers, machinery) until the environment is really ash-free.
- Seek advice from public officials regarding disposal of volcanic ash in your community.
- Wet ash can be slippery. Use caution when climbing on ladders and roofs.
- Establish childcare to assist parents involved in cleanup.

## Attachment 7: American Red Cross Safety Information - VOLCANOES

### **BEFORE:**

- Learn about your community warning systems and emergency plans.**
- Be prepared for the hazards that can accompany volcanoes:**
  - Mudflows and flash floods
  - Landslides and rock falls
  - Earthquakes
  - Ash fall and acid rain
  - Tsunamis
- Make evacuation plans.**
  - If you live in a known volcanic hazard area, plan a route out and have a backup route in mind.
- Develop an emergency communication plan.**

In case family members are separated from one another during a volcanic eruption (a real possibility during the day when adults are at work and children are at school), have a plan for getting back together.

Ask an out-of-state relative or friend to serve as the "family contact," because after a disaster, it's often easier to call long distance. Make sure everyone knows the name, address, and phone number of the contact person.
- Have disaster supplies on hand:**
  - Flashlight and extra batteries
  - First aid kit and manual
  - Emergency food and water
  - Non-electric can opener
  - Essential medicines
  - Dust mask
  - Sturdy shoes
- Get a pair of goggles and a throwaway breathing mask for each member of the household in case of ash fall.**
- Contact your local emergency management office or American Red Cross chapter for more information on volcanoes.**
- Although it may seem safe to stay at home and wait out an eruption, if you are in a hazardous zone, doing so could be very dangerous. Stay safe. Follow authorities' instructions and put your disaster plan into action.**

### **DURING:**

- Follow the evacuation order issued by authorities.**
- Avoid areas downwind and river valleys downstream of the volcano.**
- If caught indoors:**
  - Close all windows, doors, and dampers.
  - Put all machinery inside a garage or barn.
  - Bring animals and livestock into closed shelters.
- If trapped outdoors:**

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- Seek shelter indoors.
- If caught in a rock fall, roll into a ball to protect your head.
- If caught near a stream, be aware of mudflows. Move upslope, especially if you hear the roar of a mudflow.

**Protect yourself during ash fall:**

- Wear long-sleeved shirts and long pants.
- Use goggles to protect your eyes.
- Use a dust mask or hold a damp cloth over your face to help breathing.
- Keep car or truck engines off.

**Stay out of the area defined as a restricted zone by government officials.**

Effects of a volcanic eruption can be experienced many miles from a volcano. Mudflows and flash flooding, wildland fires, and even deadly hot ash flow can reach you even if you cannot see the volcano during an eruption. Avoid river valleys and low-lying areas. Trying to watch an erupting volcano up close is a deadly idea.

**If you see the water level of a stream begin to rise, quickly move to high ground. If a mudflow is approaching or passes a bridge, stay away from the bridge.**

Mudflows are powerful "rivers" of mud that can move 20 to 40 miles-per-hour. Hot ash or lava from a volcanic eruption can rapidly melt snow and ice at the summit of a volcano. The melt water quickly mixes with falling ash, with soil cover on lower slopes, and with debris in its path. This turbulent mixture is dangerous in stream channels and can travel more than 50 miles away from a volcano. Also, intense rainfall can erode fresh volcanic deposits to form large mudflows.

**Listen to a battery-operated radio or television for the latest emergency information.**

**AFTER:**

**If possible, stay away from volcanic ash fall areas.**

**When outside:**

- Cover your mouth and nose. Volcanic ash can irritate your respiratory system.
- Wear goggles to protect your eyes.
- Keep skin covered to avoid irritation from contact with ash.

**Clear roofs of ash fall:**

Ash fall is very heavy and can cause buildings to collapse. Exercise great caution when working on a roof.

**Avoid driving in heavy ash fall.**

Driving will stir up more ash that can clog engines and stall vehicles.

**If you have a respiratory ailment, avoid contact with any amount of ash. Stay indoors until local health officials advise it is safe to go outside.**

**Remember to help our neighbors who may require special assistance -- infants, elderly people, and people with disabilities.**