Alaska Land Mobile Radio Communications System

Catastrophic Natural Events (CNE) Contingency Plan

Version 16

January 23, 2025

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Document Revision History

Date	Reason for Changes	Version
5/19/2009	Approved by the User Council – Final.	1
7/26/2010	Annual review/update. Approved by the User Council.	2
8/22/2011	Annual review/update. Approved by the User Council.	3
12/24/2012	Annual review/update. Approved by the User Council.	4
12/9/2013	Annual review/update. Approved by the Operations Management Office.	5
12/19/2014	Annual review/update. Approved by the Operations Management Office.	6
12/9/2015	Annual review/update. Approved by the Operations Management Office.	7
12/13/2016	Annual review/update. Approved by the Operations Management Office.	8
12/27/2017	Annual review/update. Approved by the Operations Management Office.	9
1/14/2019	Annual review/update. Approved by the Operations Management Office.	10
1/8/2020	Annual review/update. Approved by the Operations Management Office.	11
1/29/2021	Annual review/update. Approved by the Operations Management Office.	12
1/11/2022	Annual review/update. Approved by the Operations Management Office.	13
1/4/2023	Annual review/update. Approved by the Operations Management Office.	14
1/25/2024	Annual review/update. Approved by the Operations Management Office.	15
1/22/2025	Annual review/update. Approved by the Operations Management Office.	16

Acronyms and Definitions

Alaska Federal Executive Association (AFEA): federal government entities, agencies, and organizations, other than the Department of Defense, that operates on the shared ALMR system infrastructure.

Alaska Land Mobile Radio (ALMR) Communications System: the ALMR Communications System, as established in the Cooperative and Mutual Aid Agreement.

Alaska Municipal League: a voluntary non-profit organization in Alaska that represents 165 cities, boroughs, and unified municipalities.

Alaska Public Safety Communication Services (APSCS): a State of Alaska (SOA) office in the Department of Public Safety (DPS) that operates and maintains the SOA Telecommunications System (SATS) supporting ALMR and providing public safety communication services and support to state agencies.

Department of Defense (DoD) – Alaska: Alaskan Command, US Air Force, and US Army component services operating under United States Pacific Command and United States Northern Command.

Department of Public Safety (DPS): a State of Alaska (SOA) department where the SOA Telecommunications System (SATS) and ALMR programs reside.

Executive Council: governing body made up of three voting members and two associate members representing the original four constituency groups: the State of Alaska, the Department of Defense, Federal Non-DoD agencies (represented by the Alaska Federal Executive Association), and local municipal/government (represented by the Alaska Municipal League and the Municipality of Anchorage).

Interoperable Communications: the ability of public safety, including emergency and other first responders, to talk to one another via radio and other communication systems, and to exchange voice and/or data with one another on demand in real time.

Local Governments: those Alaska political subdivisions defined as municipalities in AS 29.71.800(14).

Member: a public safety agency including, but not limited to, a general government agency (local, state, tribal, or federal), its authorized employees and personnel (paid or volunteer), and its service provider, participating in and using the system under a membership agreement.

Municipality of Anchorage (MOA): the MOA covers 1,951 square miles with a population of over 300,000. The MOA stretches from Portage, at the southern border, to the Knik River at the northern border, and encompasses the communities of Girdwood, Indian, Anchorage, Eagle River, Chugiak/Birchwood, and the native village of Eklutna.

Operations Manager: represents the User Council interests and makes decisions on issues related to the day-to-day operation of the system and any urgent or emergency system operational or repair decisions; establishes policies, procedures, contracts, organizations, and agreements that provide the service levels as defined in the ALMR Service Level Agreement in coordination with the User Council.

Operations Management Office (OMO): develops recommendations for policies, procedures, and guidelines; identifies technologies and standards; and coordinates intergovernmental resources to facilitate communications interoperability with emphasis on improving public safety and emergency response communications.

State of Alaska (SOA): the primary maintainer of the state's infrastructure system, and shared owner of the ALMR system. The State of Alaska sponsors local/municipal agencies onto the system.

System: the ALMR Communications System, as established in the Cooperative Agreement, and any and all System Design/System Analysis (SD/SA) and System Design/System Implementation (SD/SI) documents.

System Management Office (SMO): the team of specialists responsible for management of maintenance and operations of the system.

User: an agency, person, group, organization, or other entity which has an existing written membership agreement to operate on ALMR with one of the parties to the Cooperative and Mutual Aid Agreement. The terms user and member are synonymous and interchangeable. All terms and conditions of the Cooperative and Mutual Aid agreement defined apply to local/municipal government agencies that are sponsored/represented by the State of Alaska

User Council: governing body responsible for recommending all operational and maintenance decisions affecting the system. Under the direction and supervision of the Executive Council, the User Council has the responsibility for management, oversight, and operation of the system. The User Council oversees the development of system operations plans, procedures, and policies.

1.0 Purpose

The key to maintaining the Alaska Land Mobile Radio (ALMR) Communications System operational availability throughout a catastrophic natural event (CNE) is advance preparation for events, periodic plan reviews, and effective execution of the CNE plan. Personnel safety is a critical concern as any CNE evolves and may justifiably limit the ability to respond to system faults and possibly delay restoration of the system.

The term CNE does not necessarily equate to a disaster. A disaster may, or may not, occur because of a CNE. The term disaster is not used in this plan to identify events regarding the system but may be a trigger for actions like Federal disaster relief funds or Federal Emergency Management Agency (FEMA) and American Red Cross mobilization.

The purpose of the contingency plan is to mitigate the effects of a CNE on ALMR operational availability. The anticipated effects may result from degraded component operation, propagation interference, or damage to the equipment, including controllers, shelters, transportable units, and remote sites.

Effective execution of any plan requires a clear line of authority, responsibility, and funding access. ALMR actions defined in this plan are independent of whether a CNE is being managed at local, state, tribal, Department of Defense (DoD), or other federal agency levels.

2.0 Scope

ALMR is part of a much larger picture regarding preparation, response, mitigation, and management during a CNE. ALMR is one of many tools essential to an effective response by local, state, DoD, other federal agencies, and tribal entities.

The goal of this plan is to maintain the highest possible operational availability of the ALMR system before, during, and after a CNE. This plan is not related to managing the response to a CNE; that is the responsibility of local, state, DoD, tribal, and other federal agencies. Additionally, this plan is not related to operational use of ALMR, which is a user responsibility. The purpose of the plan is to ensure the system is available for operational use by preparing for, and mitigating to the greatest extent possible, effects of a CNE.

The ALMR Operations Management Office (OMO) is responsible for initiating and terminating actions related to ALMR operations during a CNE. No ALMR contingency or restoration action should be undertaken without direct coordination with the OMO. There are situations where the best decision may be to allow the CNE to run its course and focus all efforts on post-event recovery and restoration without attempting to

prevent or mitigate the effects of a CNE on ALMR. Such decisions will be made after consultation and risk analysis of all facts pertaining to the associated CNE.

Contingency operations contained in this plan will continue until the contingency team (paragraph 4.2.1) deems the system to be stable and operable. At such time, the Operations Manager, in coordination with the System Manager (SM), will evaluate system status and, upon agreement, will declare the event ended.

3.0 Roles and Responsibilities

3.1 Executive Council

The Executive Council (EC) represents the parties to the Cooperative and Mutual Agreement who are the Department of Defense – Alaska (DoD-AK), the Alaska Federal Executive Association (AFEA) (excluding DoD), and the State of Alaska (SOA). As such, they are responsible for emphasizing the importance of ALMR funding to their respective agencies, as well as approving the annual budget submitted by the OMO, which may outline expenditures required in support of CNE preparedness.

3.2 User Council

The User Council (UC) shall be responsible for the formal approval of the CNE Contingency Plan, and any substantial revisions hereafter.

3.3 Operations Management Office

The OMO will have primary authority, in coordination with the System Management Office (SMO), for decisions regarding activation of this plan; directing the activities of ALMR staff; deploying staff to remote sites to perform preventive actions or restoration tasks; and informing user agencies of system status. If an event occurs in the absence of the Operations Manager (OM), the CNE Contingency Plan will be managed by his/her designee, assisted by the System Manager (SM) and the State of Alaska (SOA) Department of Public Safety (DPS) Alaska Public Safety Communication Services (APSCS) Manager.

The OM, or designated representative, and his/her staff will:

- Report system status to the EC, UC, Joint Network Coordination Center (JNCC), State Emergency Coordination Center (SECC), and any other established event or disaster management officials known at the time.
- Assess the threat to the system based on event type, location, extent, predicted scope, and developing conditions.

- Assume responsibility for ALMR availability, status reporting, protective measures, and restoration actions.
- Identify a priority set of credible and acceptable CNE status sources to be used for reliable, verified information (official web sites, on-site observers, public alarm, and notification systems, State Emergency Operation Center (SEOC) status reports, etc.).
- Coordinate the deployment of resources, as assigned by the SM. Consideration must be given to the pace of development of the CNE and the potential risk to personnel.
- Implement scheduled actions for inspection, restoration, repair, cleaning, and testing of sites and components when the CNE abates. Event management officials may rely on ALMR as a critical component of the potentially extended recovery effort from the CNE. Therefore, some cleanup/testing may be postponed until operations return to normal.
- Maintain documentation related to the CNE to include a log of actions taken, expenditures incurred, and other relevant data to substantiate activities in the event reimbursement may be possible from state or federal authorities.
- Conduct an annual review of this plan with the SM to validate the procedures it contains.
- Integrate this CNE Contingency Plan with broader natural event or disaster recovery plans developed by Alaska Command (ALCOM), Department of Military and Veterans Affairs (DMVA), DPS, Municipality of Anchorage (MOA), and other response organizations, if appropriate.
- Develop lessons learned including recommendations for revised procedures, plan updates, and system modifications/improvements after a CNE.

3.4 System Management Office

The SMO shall, in accordance with the scope of their contract:

- Prepare a report on the system status to include current deficiencies or outages, whether or not related to the CNE.
- Assess impact to ALMR sites and plan deployment of resources, as appropriate, to priority sites to take protective measures/employ clean up kits.
- Respond to system component failures, degraded operation, and reduced coverage, which requires immediate correction.
- Respond to requests for expanded capacity, expanded coverage, or system reconfiguration, if practical.
- Develop a schedule to inspect, repair, clean, test, and restore sites and components when the CNE abates.
- Maintain updated point of contact information (POC) to include vendors and subcontractors, as appropriate.

- Provide OM with documentation related to expenses and actions taken during the CNE.
- Assist OM with development of lessons learned, including recommendations for revised procedures, plan updates, and system modifications/improvements.

4.0 Response Planning

Response actions revolve around three phases: 1) preventive measures; 2) measures taken during the event; and 3) post-event measures.

Additional factors taken into consideration during planning/execution are the description of the problem and establishment of the response organization.

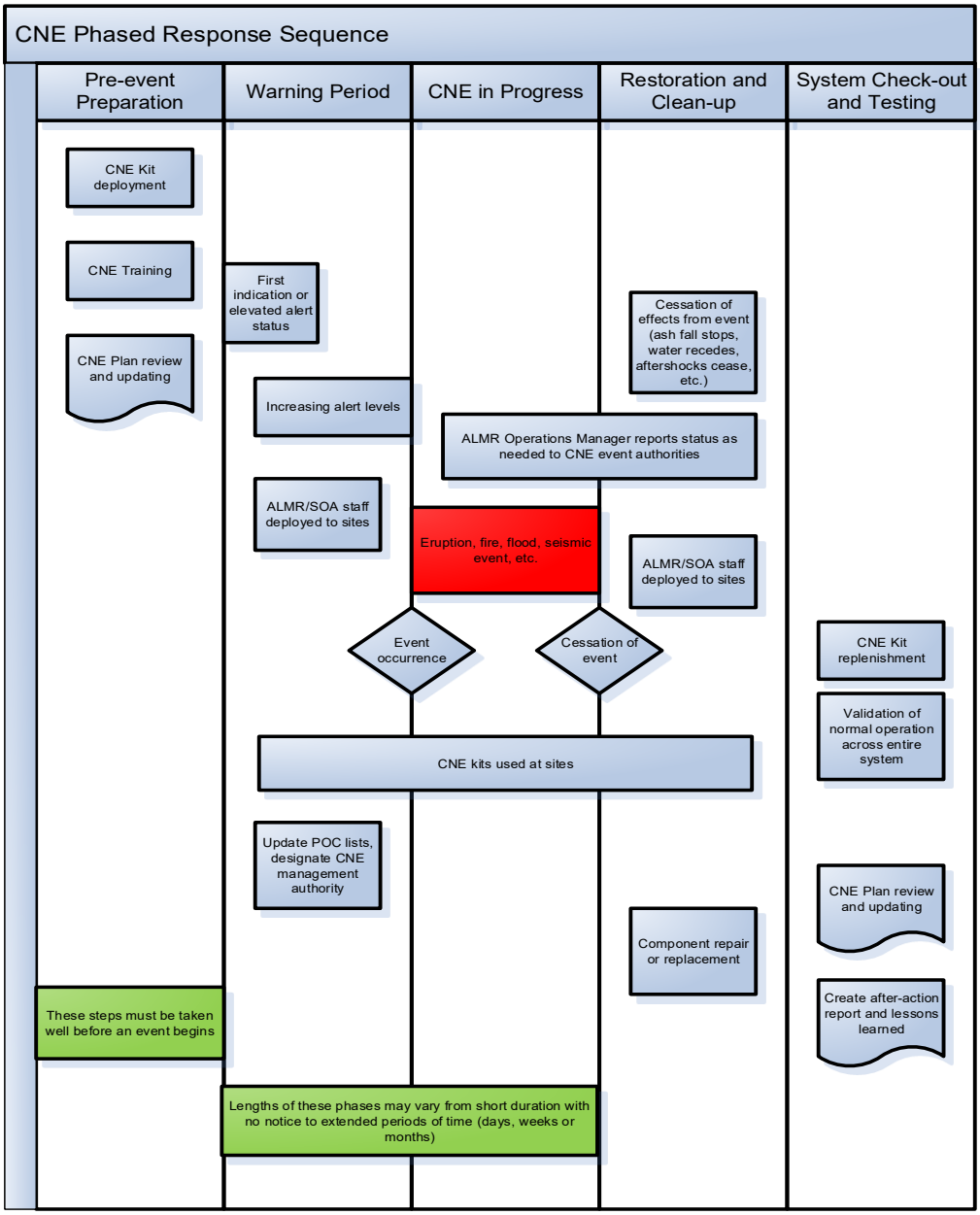


Figure 4-1. CNE Phased Response Sequence

4.1 Resource Requirements

Bearing in mind that this plan deals only with ALMR, if an event occurs, competition for resources like people, transportation, equipment, and funding may limit the ability to execute some, or all, elements of this plan. Identifying available resources and prioritization trade-offs will be a primary task for the OM throughout the phases of preparation, response, mitigation, and restoration.

4.1.1 Possible sources of funding

- Department of Defense (DoD)
- State of Alaska (SOA)
- Municipality of Anchorage (MOA)
- Non-DoD Federal sources

4.1.2 Cost Estimates

Costs for CNE preparation and response are difficult to predict. It is agreed that funding for these efforts would come from operations and maintenance accounts managed by the infrastructure owners or from an infrastructure owner's application for federal disaster relief funding. Cost elements for CNEs could include equipment, supplies, transportation services, and staff overtime. At this time, the ALMR cooperative partners have not budgeted for expenditures resulting from CNEs.

4.1.3 Materials

Required materials could include items such as spare parts, fans, AC/DC vacuum cleaners, garbage bags, etc. The SMO has a limited number of CNE kits ready for dispatch with deployed personnel to assist with cleanup. Site owners should also be prepared to change generator oil and filters, air intake filters, and other consumables on a weekly basis, or as appropriate to the type of event until declaration of event termination.

4.1.4 Service Level Agreement. Responsible parties must understand their obligations regarding infrastructure funding and material support, which are outlined in the ALMR Service Level Agreement.

4.2 Contingency Planning Management

4.2.1 Contingency Team

These positions may be existing staff positions or may be specific to CNE response. At a minimum, the contingency team should consist of:

- Operations Manager
- System Manager
- User Council Chair or Vice Chair
- DoD Team Leader
- SOA Team Leader

4.2.2 Event Notification Sources

Several sources of information, CNE alerts and status reports, are available to the OM and will form a basis for executing contingency plans for site protection or remediation. These sources may include the SOA color-coded situation alerts, web or public media alerts from the Tsunami Warning Center, Alaska Wildland Information website, National Oceanic and Atmospheric Administration (NOAA) alerts, Alaska Volcano Observatory (AVO) alerts, Alaska Earthquake Center alerts, and others.

In general, event-specific team response will be initiated at the direction of the OM using whatever means of communication are appropriate/available.

It should be noted that some protective measures have the potential to degrade the operation of the system in the absence of the anticipated effects of the CNE and should not be initiated unilaterally. For example, wrapping an operating electronic component in plastic to protect it from dust may cause the component to overheat and fail. It may be more prudent to turn off the equipment, even at the expense of rendering the site inoperable, and restarting it following the event in order to ensure its availability for recovery operations. These decisions are to be made only by the OM, in consultation with the contingency response team.

As a rule, sites will remain ‘ON,’ if not disabled by the occurring CNE.

5.0 Event Response

5.1 Trigger Event

Trigger events are defined criteria used to prompt immediate action by ALMR personnel to prepare for the effects of a pending CNE. In most cases, the trigger event will be determined by the specific direction of the OM, and not the issuance of one or more publicly issued alerts or warnings.

However, in the event of clearly evident signs of a CNE (rising water, seismic events, visible volcanic ash, etc.), ALMR personnel will unilaterally begin taking protective measures to ensure continued system operation, to the greatest extent possible, without exposing themselves or system operations to risks. Personnel will provide a description of actions taken and status of the affected site(s) to the OM/SM by whatever means available and at intervals sufficient to maintain awareness of the current situation and ensure personnel safety.

5.2 Contingency Plan Activation

If the CNE response plan is activated, the OM will notify all team members and inform them of the details of the event. Once the initial notification is made to the contingency team, the OM will notify the appropriate agencies and remaining staff personnel, as outlined in paragraph 5.3 and Appendix D, on the general status of the incident. Team leaders are responsible for notifying their respective response team, staff, and chain of command.

5.3 Event Roles and Responsibilities

The OM has ultimate responsibility, as designated by the ALMR Cooperative and Mutual Aid Agreement. However, ALMR is a shared system, and the OM will coordinate CNE response actions with the SOA APSCS and the DoD, as required.

This chart applies to the flow of information and tasks related to management of ALMR availability during a CNE.

CNE
Roles & Responsibilities

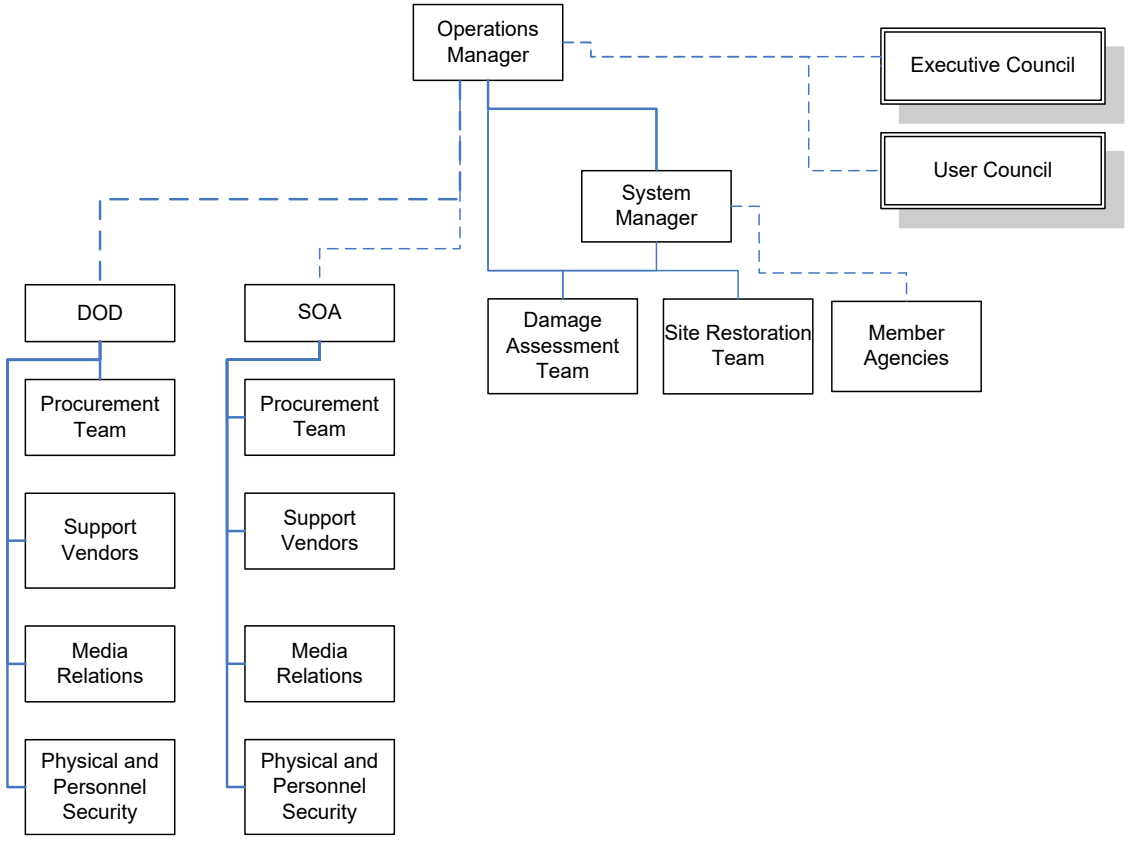


Figure 5-1. CNE Responsibilities Flowchart

In the event of a CNE, ALMR agencies should initiate their internal notification recall process and all designated staff will report to their stations, as soon as safely possible. This list contains the people most likely to be involved in the initial CNE response.

Last	First	Department / Title	Work	Fax	Cell	E-Mail
			ALMR			
Fussey	Paul	Operations Manager	907-777-1109	907-269-6797	907-942-7223	paul.fussey@wostmann.onmicrosoft.com
Fahnestock	Nik	System Manager	907-334-2567	907-269-6797	605-484-4799	nfahnestock@beringstraits.com
			Motorola			
		Motorola SSC	888-877-7024			
			DOD			
Woodall	Tim	DOD COR Liaison	907-552-8223	907-552-6965	907-885-8087	tim.woodall.3@elmendorf.af.mil
			SOA			
Stormo	Scott	APSCS Manager, SOA	907-269-5773		334-221-3980	scott.stormo@alaska.gov
Roberts	Mark	SEOC standby	907-428-7100			
			Sites			
Birch Hill		Phone Patch	907-334-2504			
Birch Hill		Zone #2 Controller	907-353-7449			
Tudor Rd		Zone #1 Controller	907-269-5961			

Figure 5-2. CNE Contact List

Other specific responsibilities may include:

Internal Points of Contact	Responsibility
Operations Manager	Activates ALMR Contingency Plan
System Management Office	Notify ALMR member agencies
	Notify appropriate vendors (Motorola, etc.)
Contingency Team (para 4.2.1)	Monitors the event
Damage Assessment Team	Documents results of damage assessment. Recommends corrective action to Contingency Team. (ALMR/SOA/DoD)
Site Restoration Team	Restores the site to pre-event status (when possible) (ALMR/SOA/DoD)
Media Relations Team	Defer to DoD/SOA
Physical/Personal Security Team	Defer to DoD/SOA
Procurement Team	Defer to DoD/SOA

Figure 5-3. Internal Responsibilities

5.4 Event Records Management

A record of all event-specific actions taken to protect ALMR equipment will be created and maintained by whatever means is appropriate at the time. This is essential to the development of lessons learned, specifically regarding the actual effects of a CNE on system operations and availability. Agencies participating in ALMR sustainment or recovery operations should consolidate findings into one report to the greatest extent possible.

At the termination of the event, all records should be consolidated and filed by the ALMR Document Specialist.

Participating agencies should hold a lessons-learned workshop within one month of declaration of the event termination. Results of the workshop should be documented and distributed to all participants and other agencies that may have a vested interest.

5.5 Pre-Event Planning

5.5.1 Volcanic Eruption

The Alaska Volcano Observatory (AVO), in partnership with other federal, state, tribal, and local agencies provide the following warning levels:

- GREEN: Volcano is in a noneruptive state (dormant)

- YELLOW: Volcano is restless (rumblings)
- ORANGE: Volcano is exhibiting heightened or escalating unrest or eruption is underway with no or minor ash plume
- RED: Eruption is imminent with significant emission of volcanic ash or eruption is underway

Presuming that ALMR equipment is in the predicted ash fall area, there are measures that must be taken to mitigate potential damage to this equipment.

The following actions must be executed as part of the pre-event planning process, or during a period of escalating alert status.

Each action should be reviewed annually, at a minimum. In the case of a CNE, deficiencies in the list should be noted during after-action lessons learned workshops and changes incorporated, as required.

- Conduct a vulnerability analysis of equipment and facilities to determine which would be the most affected by ash fall and identify those inadequately protected.
- Analyze system functionality to determine possible remote capabilities that could be utilized during the response.
- Conduct an analysis to determine the impact of an ALMR outage on users.
- Identify appropriate methods of protecting vulnerable equipment and facilities.
- Develop a priority list of facilities that must be kept operational versus those that can be shut down or simply left running during and after ash falls (see Appendix B for list of critical sites).
- Develop communication plans for notifying affected agencies and employees of potential ash fall, heightened alert status, reduced/terminated operations, and accelerated maintenance requirements for priority buildings and machinery during cleanup operations.
- Identify personal protection equipment and logistics support that will be needed during and after ash fall, especially for those personnel involved in cleanup operations (filter masks, respirators, eye protection, hats or helmets, food and water, auxiliary lighting, and even portable toilets to minimize walking traffic in buildings).
- Deployable clean up kits should be containerized and readily loadable on vehicles or helicopters, as appropriate. Kits should be prepositioned whenever possible. When a CNE is imminent, individuals may be deployed rapidly with no requirement to carry anything more than personal protective equipment and clothing.
- Stockpile additional spare parts for critical equipment, including air filters, oil, and oil filters. Spare parts should be pre-deployed to sites, space permitting.
- Identify effective and efficient ash-removal methods for equipment and facilities; seek best practices from other volcano prone areas.

- Provide educational material to personnel regarding physical properties of volcanic ash, potential health effects, and personal protective equipment.

5.5.2 Flooding/Tsunami

Flooding can occur from river overflow, tsunamis, sudden release of glacial ice dams, severe storms, or localized effects of creeks and water supply system breaches. With the exception of a tsunami affecting broad coastal areas, the effects of other types of flooding on ALMR are likely to be limited.

In the event of a tsunami where cataclysmic flooding and wave action are likely in low elevation areas with little to no warning, the remaining elements of the system would be those that are on higher ground and do not rely on power from the affected area. Events of this magnitude lend themselves to planning using exercise and simulation to determine how the remaining elements of the system might be used to support recovery efforts and other activities. It is unlikely that any effort would be dedicated for site protective measures due to the extreme risk to personnel involved.

Therefore, it can be assumed the tsunami would destroy all electronic equipment at inundated sites, except in the unlikely situation where there was sufficient advanced warning to allow removal of the equipment. In any case, restoration of the site after the water subsides would be dependent on the severity of the flooding and could vary from minor cleanup to a complete rebuild of the site. These decisions would be made at the time of the event and do not lend themselves to detailed planning.

5.5.3 Earthquake

Advance measures to mitigate the effects of an earthquake on ALMR are limited to those already built into the design and implementation of the sites to comply with seismic standards and best practices. In general, seismic events of sufficient magnitude to damage or disable ALMR equipment will also make vehicle transportation difficult and may render other communications systems inoperable. Restoration of ALMR will be a priority due to the reliance of public-safety first responders on the system as their primary means of coordinating overall response and recovery efforts.
Recovery efforts at the direction of the OM, and in coordination with the SM, will be tailored to the situation. Consideration will be given to the risk to personnel assigned to system restoration that could result from exposure to damaged buildings, transportation hazards, and aftershocks.

5.5.4 Wildfire

Wildfires, whether forest or tundra, are a constant threat in most areas of Alaska. These events most commonly occur during dry spring and summer seasons but can and have occurred in mid-winter in un-forested tundra, even with light snow cover. Wildfires are

often ignited by lightning, other ignition sources, or from human action, intentional or otherwise.

The risks to sheltered telecommunications equipment range from smoke ingestion and internal overheating to complete incineration. ALMR shelters are designed to withstand moderate heat and smoke effects but are not capable of withstanding the intense heat of generalized conflagration.

Standards for minimum proximity of brush around a site, or also known as defensible space, can be found at forestry.alaska.gov but are difficult to maintain at some locations where the growth of vegetation can be rapid in the summer. Overgrowth at sites will be noted during periodic maintenance inspections and provided to the owning agency for corrective action. Failure of the owning agency to correct noted deficiencies puts the site, and subsequently, the system at risk.

Other than site shutdown (locally or remotely) to protect sensitive electronic components from smoke damage, little can be done to protect sites in advance of a fire event. The OMO and APSCS offices must work with the forestry liaison during a fire event to properly categorize ALMR sites for protection from fires. Actions taken will be limited to preventive measures previously mentioned or those directed by the OM after an event to restore affected sites.

5.5.5 Extreme Snow Depth

In some areas, the potential exists for snow to accumulate in depths sufficient to partially or completely bury an ALMR shelter or antenna, which could affect system performance or cause a complete shutdown.

When visiting sites, the assigned or deployed personnel should take the necessary actions to remove snow using appropriate equipment.

At the direction of the OM, personnel will be deployed to remote sites to conduct snow removal at intervals adequate to maintain site operation, pending the availability of transportation and weather conditions which are conducive to safe access.

5.5.6 Landslide

Landslide is defined as the movement of a mass of rocks, debris, or earth down a slope. Around the state, but especially in Southeast Alaska with its higher amounts of precipitation, debris flows, mudflows, or mudslides are examples of common landslide types.

Landslides are said to have multiple triggers but share the same root cause, that is, the forces acting down-slope (mainly due to gravity) exceed the strength of the earth

materials that compose the slope. The United States Geological Survey (USGS) explains that "Landslides can be initiated in slopes already on the verge of movement by rainfall, snowmelt, changes in water level, stream erosion, changes in ground water, earthquakes, volcanic activity, disturbance by human activities, or any combination of these factors"[1].

Presuming that ALMR equipment is in the predicted landslide area, there are measures that must be taken to mitigate potential damage to equipment. The following actions must be executed as part of the pre-event planning process or during a period of escalating alert status.

Each action should be reviewed annually, at a minimum. In the case of a CNE, deficiencies in the list should be noted during after-action lessons learned workshops and changes incorporated, as required.

- Conduct a vulnerability analysis of ALMR sites to determine which would be the most affected by landslides and identify those inadequately protected.
- Analyze system functionality to determine possible remote capabilities that could be utilized during the response.
- Conduct an analysis to determine the impact of an ALMR outage on users.
- Identify appropriate methods of protecting vulnerable equipment and facilities.
- Develop a priority list of facilities that must be kept operational versus those that can be shut down or simply left running during and after a landslide event (see Appendix B for list of critical sites)
- Develop communication plans for notifying affected agencies and employees of potential landslide, heightened alert status, reduced/terminated operations, and accelerated maintenance requirements for priority buildings and machinery during cleanup operations.
- Identify personal protection equipment and logistics support that will be needed during and after a landslide, especially for those personnel involved in cleanup operations (travel, equipment, tools, hats or helmets, food and water, auxiliary lighting, and electric power).
- Deployable cleanup kits should be containerized and readily loadable on vehicles or helicopters, as appropriate. Kits should be prepositioned whenever possible. When a CNE is imminent, individuals may be deployed rapidly with no requirement to carry anything more than personal protective equipment and clothing.
- Stockpile additional spare parts for critical equipment, including air filters, oil, and oil filters. Spare parts should be pre-deployed to sites, space permitting.
- Identify effective and efficient debris and mud removal methods for equipment and facilities; seek best practices from other landslide prone areas.

[1] https://www.usgs.gov/faqs/what-a-landslide-and-what-causes-one?qt-news_science_products=0#qt-news_science_products

- Provide educational material to personnel regarding physical properties of landslides, potential hazards, and personal safety.

6.0 Event Action Plans

All ALMR sites can be considered critical to providing communications capabilities to first responders around the state at any time. Depending on geographic location and the type of CNE that has occurred, or is about to occur, a particular site or sites may be more critical than others at that moment.

Given the various CNE events that could potentially affect the ability of a site to adequately perform its intended function, decisions regarding the site or sites will best be made based on the situation at the time. The SM, in coordination with the OM, will utilize cascading outage flow charts to develop contingency action plans. Efforts to prepare a site or sites for an anticipated event, or to respond post event, are best made by the Contingency Team activated for the CNE.

The CNE checklist (Appendix A) should be executed, either unilaterally or as directed, when a CNE is imminent, in progress, or has occurred. Essential steps for each of several foreseeable CNEs have been identified. However, for situations not specifically covered by this plan, the checklist should be modified to provide the greatest possible assurance of ALMR continued operational availability.

The following are only the basic essential planning steps. Other steps identified by the Contingency Team or necessitated by the CNE can be performed, when appropriate.

The steps are listed by CNE type.

6.1 Volcano

Volcanic eruptions represent one of the most probable CNEs next to earthquakes. The effects from volcanic eruptions affect not only the immediate area, but ash fallout, dependent on prevailing winds, has the potential to affect sites hundreds of miles away.

6.1.1 Site monitoring

- Determine the priority for visiting sites based on apparent degradation to operational availability, criticality of the site to overall ALMR functionality, and accessibility.
- Conduct inspection visits at each site within the ash fall area and those located near the perimeter.
- Repeat site visits periodically to check for intrusion by wind-borne ash.

6.1.2 Site restoration

- Clean the shelter interior, as necessary.
- Remove ash from shelter roof, intake ducts, and entry ways.
- Re-enable air conditioners and intake/exhaust fans, if disabled.
- Remove/replace non-permanent filters, as required.
- Report completion of restoration actions to the OM.

6.2 Flood/Tsunami

Only the Peger Road site has been subject to localized flooding conditions in the past. However, tsunamis remain a danger to those sites along the coastal areas.

6.2.1 Site monitoring

- Determine the priority for visiting sites based on apparent degradation to operational availability, criticality of the site to overall ALMR functionality, and site accessibility.
- Conduct inspections of each site, when safely accessible.

6.2.2 Site restoration

- Remove debris from site.
- Remove mud from shelter interior, intake ducts and entryways.
- Check the functionality of air conditioners and intake/exhaust fans.
- Report completion of restoration actions to the OM.

6.3 Wildfire

Wildfires present a danger to both SATS and ALMR sites.

6.3.1 Site monitoring

- Determine the priority for visiting sites based on apparent degradation to operational availability, criticality of the site to overall ALMR functionality, and accessibility.
- Conduct inspections of each site within the burn area, when safely accessible.

6.3.2 Site restoration

- Remove debris from site.
- Clean the shelter interior.
- Remove ash and soot from shelter roof, intake ducts, and entry ways.
- Check and clean air conditioners and intake/exhaust fans.
- Remove non-permanent air filters, if previously installed as a preventive measure.

- Inspect /replace permanent air filters.
- Report completion of restoration actions to the OM.

6.4 Earthquake

Alaska experiences over 100 earthquakes weekly. Although few are generally felt, the danger from a catastrophic earthquake, like the one in 1964, remains a reality.

6.4.1 Site monitoring

- Determine the priority for visiting sites based on apparent degradation to operational availability, criticality of the site to overall ALMR functionality, and accessibility.
- Conduct inspections at each site within the affected area, when safely accessible.
- Inspect sites thoroughly for structural cracks, floor or foundation failures, tower structures, failed equipment, and broken equipment mounts, rack bolts, and equipment power connectors, etc.
- Repeat site visits periodically to check for subsequent damage caused by aftershocks.

6.4.2 Site restoration

- Clean the shelter, as necessary.
- Conduct or schedule repairs, as needed.
- Remove debris from site, as necessary.
- Remove debris or dust from shelter roofs, intake ducts, and entry ways.
- Replace air filters, as required, when dust is evident.
- Report completion of restoration actions to the OM.

6.5 Landslide

6.5.1 Site monitoring

- Determine the priority for visiting sites based on apparent degradation to operational availability, criticality of the site to overall ALMR functionality, and accessibility.
- Conduct inspection visits at each site within the landslide area and those located near the perimeter.
- Repeat site visits periodically to check for any changes to site stability.

6.5.2 Site restoration

- Ensure the site area is safe and no longer at risk.
- Clean the shelter interior, as necessary.
- Remove debris from shelter roof, intake ducts, and entry ways.

- Re-enable air conditioners and intake/exhaust fans, if disabled.
- Remove/replace non-permanent filters, as required.
- Report completion of restoration actions to the OM.

7.0 Post-Event Measures

7.1 Criteria

A CNE will be considered terminated only after direct observation of each specific site confirms that there are no continuing effects (water has subsided, ash fall has ceased, fire is out, etc.) and a report has been made to the OM. At that point, the OM may direct that post-event actions commence.

7.2 Procedures

Required post-event actions will vary with the type of CNE encountered, but might include:

- A detailed site inspection.
- Filter replacement.
- Water/debris removal.
- Electronic component operational check/replacement.
- Shelter structural repair.
- Tower inspections.,
- Complete preventive maintenance inspection.
- Complete site operational check (similar to an acceptance test procedure).

7.3 Notifications

The SMO will notify the OM of the status of each site, with emphasis on damage found, and coordinate with the SOA and DoD on a schedule for site restoration. The OM will notify all necessary personnel of standup/stand down/all clear, when appropriate.

The following table lists the types of key personnel required to authorize the beginning/completion of both the pre- and post-event activities for evaluating and returning the system to its normal operating mode.

Key Personnel	Role
Decision Makers	Make the decisions to begin/discontinue the contingency operations and begin/terminate the recovery process.
Operations Personnel	The key operational resource personnel will be needed to return to normal system operations.

Recovery Team	The personnel needed to execute the process of resuming normal operations after the event.
Vendors / Members	Vendor relationships (internal and external) and member agencies that will be involved in recovery efforts/resuming normal operations.

Figure 7-1. Key Decision Makers

7.4 Stand Down/All Clear

The OM, or his/her designee, will be the sole authority to issue a stand down from CNE activities related to an on-going event and to direct commencement of recovery and restoration activities. This status change will not be based on the issuance of a lowered state of alert by organizations like the Alaska Volcano Observatory, Tsunami Warning Center, etc. These types of agencies deal exclusively with the occurrence of events and not the downstream effects that could continue to affect ALMR sites.

As an administrative function, the OM will inform user agencies and senior management when all restoration activities are complete and ALMR is in full system-wide operation.

8.0 Training and Testing Requirements

At the discretion of the OM, or higher authority within the User Council or Executive Council, an exercise may include a simulated event such as a training deployment to one or more sites to validate transport plans, pre-event measures, deployment kit status and inventory, and recovery procedures.

Exercise objectives should validate the following issues:

- Contingency Team Training - training required for the contingency operations team, training on new or different processes or drills.
- Restoration Team Training - training required for the staff that will bring ALMR sites or the system back into operational status and training on specific precautionary measures for safety during or after an event.
- Testing Requirements and Procedures - identify plans and requirements for testing the validity and completeness of the contingency plan.
- Training and Testing Schedules - document the frequency of training and testing to ensure readiness of both staff and the plan prior to occurrence of actual events.

9.0 Risk Management

Risk analysis has been conducted and is incorporated into this plan. The plan contains a comprehensive set of mitigation measures designed to minimize overall risk and optimize ALMR availability before, during, and after a CNE.

At least once per calendar year, the OM will conduct a review of this plan. Specific interest items will include updating call lists and notification processes, ensuring that site lists and locations are current, reviewing the responsibilities and authority of essential participants, reviewing the status of CNE pre-deployment kits, and identifying needed modifications to this plan based on any lessons learned from events that have occurred since the last revision.

9.1 Overall Risk Potential

Impacts due to volcanic ash, flooding/tsunami, earthquakes, wildfire, and extreme snow depth may cause portions of ALMR to fail if physical damage occurs to structures, antenna, and equipment.

In the event of a CNE, ALMR may not provide complete and continuous availability within the entire coverage footprint. Decreased coverage will limit the ability of some agencies to exercise their public safety responsibilities during and after an event and could reduce overall response effectiveness.

When examining overall risks of any CNE to ALMR, it must also be understood that ALMR rides on the SATS microwave backbone. At any time during a CNE, should any portion of SATS sustain damage, this has the potential to degrade the capabilities of ALMR, regardless of whether ALMR sustains any direct damage.

During 2020, a new type of risk was identified – the pandemic. Although a pandemic may not have direct impact on ALMR infrastructure, it can affect the ability of staff to work in the office and to travel to sites freely. This has the potential to delay scheduled maintenance activities, impact timelines for system updates, or delay responses to unscheduled system outages.

9.2 Specific Identified Risks

Pre-planning will help minimize immediate response times when reacting to a CNE. It is impossible to plan every event or action that will be required. Therefore, those ‘most likely’ to impact operations will be noted and planned actions identified ahead of time.

Identified risks could include, but are not limited to, failure to implement preventive actions prior to an event, failure to take protective action (e.g., shutting down

equipment) during an event, and not having clear pre-existing lines of authority for directing and funding preventive or restoral actions.

Response to any natural event must also consider the risk to response personnel from the event, versus the need for continuous operation of ALMR.

The following risk matrix outlines critical areas in CNE planning, execution, and follow up, and their impact if not properly addressed.

Area	Action/Result	Impact
Response Planning	Failure to regularly perform these steps may result in confusion, slowed pace of response, inefficient use of resources, and inability to coordinate efforts.	**Likelihood: Low** **Consequence: Moderate** **Risk: Manageable**
Notification	Failure to perform proper notification, or failure to maintain current contact information, may result in inadequate staff to perform response, delayed response, and inability to coordinate efforts.	**Likelihood: Low** **Consequence: Moderate** **Risk: Manageable**
Records Management	Failure to capture lessons learned and conduct a thorough post-event assessment may result in the loss of documented experience and an increase of the potential for repeating past errors.	**Likelihood: Low** **Consequence: Mild** **Risk: Manageable**
Pre-Event Planning	Failure to perform pre-event planning steps could dramatically reduce the effectiveness of response efforts immediately prior to, and during, an actual event. The results could include confusion, loss of efficiency, poor coordination of response efforts, risks to personnel, unnecessary loss of availability and coverage, and jeopardy of public safety.	**Likelihood: Moderate** **Consequence: Serious** **Risk: Significant**
Restoration	Failure to perform recommended restoral actions could result in decreased ability to coordinate the restoral actions themselves, subsequent failures of system components at an increased rate, increased expenditures for component replacements, decreased life of operating components, reduced system availability during subsequent day-to-day	**Likelihood: Low** **Consequence: Moderate** **Risk: Manageable**

	operations, and resulting negative effects on public safety.	
Personnel	Failure to acknowledge risks to personnel inherent to a CNE and to take necessary protective measures including avoidance of affected areas could result in personal injury or death, diversion of resources to personnel extraction or rescue, and subsequent risks to rescue personnel.	**Likelihood: Low** **Consequence: Serious** **Risk: Significant**

Figure 9-1. Response Risk Matrix

9.3 Desired Outcome

Measures taken well in advance of an event serve to shorten the response time, standardize the response procedures, and maintain readiness for responding to an event.

Ideally, risk management pre-planning and a coordinated response from system partners will reduce CNE impact to operations ensuring maximum availability, minimal duration of down time and prevention of damage to the greatest extent possible.

10.0 Conclusion

The UC shall be responsible for the formal approval of the Catastrophic Natural Events Contingency Plan, and any substantial revisions hereafter.

Appendix A – CNE Checklist

1. OM Checklist

- ❒ Ensure CNE kits are distributed by the SMO, as appropriate (**NOTE:** The SMO maintains the CNE kits in the Mat-Su, Fairbanks, and Anchorage area. Should a CNE occur, and the SMO technicians are unable to deploy to the storage location and the site, the CNE kits may be unavailable for deployment.)
- ❒ Ensure office equipment is protected.
- ❒ Ensure notifications take place in a timely manner.
- ❒ Brief staff on shut down/restoration process.
- ❒ Notify users through regular situational updates.
- ❒ Determine if a 24-hour watch is required.
- ❒ Maintain contact with state/local/tribal, DoD, and other federal non-Dodinteragency partners.
- ❒ Designate mission-essential and non-mission essential personnel.
- ❒ Ensure all defined preventive steps are in place to protect the system.

2. Initiate Emergency Alert Procedures

- ❒ Initiate a phone contact list.
- ❒ Notify member agencies of any changes.
- ❒ Notify vendor of any emergency requirements. SMO technologists will stand by for support (coordinate with SOA APSCS and/or DoD).
- ❒ Notify funding management of possible resource requirements to include Field Replacement Units, personnel, and other communications equipment.

3. Review CNE profile and prioritize sites

- ❒ Review updates from the United States Geological Service (USGS), NOAA, Bureau of Land Management (BLM), Alaska Wildland Fire Information, Alaska Volcano Observatory (AVO), or State of Alaska websites.
- ❒ Determine the probability of impact on ALMR sites and prioritize site restoral order.
- ❒ Publish list of probable sites to be affected and inform all users of possible limited access.
- ❒ Identify sites with special access requirements (helicopter, Snow Cat, roads need to be plowed, etc.) and contact the appropriate agencies.

4. Establish a Communications Plan

❒ The Network Management Terminal will be manned depending upon the situation.

❒ The System Manager will designate a talkgroup for the use of ALMR technicians while performing emergency duties.

❒ Maintain contact with local emergency services and first responders regarding threats to ALMR facilities, or degraded operation of the System.

5. Preventive Measures

❒ At the discretion of the OM, personnel will be dispatched to at-risk sites to mitigate potential damage.

❒ Protecting each site may require a protracted presence during a long-term event. Technicians must be prepared for this eventuality.

6. Post Event Measures

❒ Develop schedules in coordination with the DoD/SOA APSCS, and Municipality of Anchorage to service each affected site.

❒ The minimum number of required personnel will be dispatched to each affected site. For safety purposes, the minimum shall be a two-person team consisting of one technical and one non-technical person.

❒ Ensure site generator and equipment are operational (coordinate with DoD/SOA APSCS, and the Municipality of Anchorage).

❒ Technicians will be on a rotating schedule to complete site checks until directed to terminate the activity by management. During or immediately after a CNE, each priority site will need to be serviced at least every 24 hours, if possible. After the CNE, when the debris is completely removed, site checks will revert to a weekly schedule, as appropriate. The weekly schedule will remain in effect until approximately 30 days after Condition Yellow or Green is declared (recurrence can be modified by management.)

Appendix B – Business Continuity Plan

This section provides scenarios to consider, regarding how the operation of the system could be managed, for maintaining functionality and availability in the presence of cascading degradation by site or by region. It addresses the effects on the overall System by the loss of specific sites or facilities, loss of power locally or by region, and how to continue to provide the maximum coverage and operational availability for all users in the face of a CNE and its anticipated effects. The contingency response team will consider the site(s) that have failed are assumed the priority site(s) at the moment and concentrate on returning them to operational status.

Possible scenarios to consider:

Scenario: The Anchorage Zone 1 controller is disabled.
Resources: Remaining controllers are the Zone 2 Controller and the Municipality of Anchorage Zone Controller
Assumptions: Sites connected to each Zone Controller are dependent on that Master Site. If a Master Site in a zone goes down, all sites will go 'unknown' (presume site trunking). All consoles in that zone will lose trunking capabilities.

Scenario: R1 North is disabled.
Resources: Atwood, Blueberry, Fire Station 12, Rabbit Creek, Site Summit, and TAS (In storage, requires a minimum of 72 hours notification to be deployed and set up.)
Assumptions: All consoles would be inoperable for Joint Base Elmendorf-Richardson (JBER). Radios can only communicate with the radios that are affiliated with the same site or would operate in simplex mode.

Scenario: The Fairbanks Zone 2 controller is disabled.
Resources: Ester Dome, Hill 3265 (Very little coverage for Fairbanks/Fort Wainwright), Peger Road, Pole Hill, and Quarry Hill.
Assumptions: All Zone 2 sites go into site trunking. Radios can only communicate with the radios that are affiliated with same site or would operate in the Simplex mode.

Other important items of consideration when planning a course of action are:

1 - Decision criteria to be used to preemptively shut down one or more sites (i.e., potential risk of damage to electronics or the generator.)
2 - How long controller sites function without commercial power (batteries operate from 2 to 8 hours; generators operate from 48 to 72 hours depending on fuel levels.)
3 - How long console sites function without commercial power (First dependency is on the owning agency's backup power sources; otherwise, batteries operate from 2 – 8 hours; generators operate from 48 – 72 hours.)

4 - Sites inaccessible without air transportation. Mountain top sites, or those requiring travel out of the Anchorage bowl area, present special challenges. Depending on the condition of the infrastructure and availability of air transportation assets following a CNE, some sites may be inaccessible for an extended period. Planning around those sites may be required to return the system to normal/near normal operations.

The following sites are only accessible by some mode of air transportation.

- Auke Lake – Aircraft
- Beaver Creek- Helicopter
- Byers Creek – Helicopter
- Cooper Mountain – Helicopter
- Dimond Courthouse – Aircraft
- Divide – Helicopter
- Ernestine – Helicopter
- Haines - Aircraft & Helicopter
- Heney Range – Helicopter
- High Mountain - Aircraft & Helicopter
- Hope - Helicopter
- Independent Ridge – Helicopter
- Lena Point - Aircraft
- Lion Head - Helicopter
- Pillar Mountain – Aircraft & Helicopter (winter)
- Reindeer Hills – Helicopter
- Saddle Mountain – Aircraft & Helicopter
- Seldovia - Helicopter
- Silvertip – Helicopter
- Site Summit- Helicopter (winter)
- Sitka-Aircraft
- Skagway - Aircraft
- Summit Lake – Helicopter
- Sunnahae – Aircraft & Helicopter
- Tsina - Helicopter
- Willow Mountain - Helicopter
- Wolcott - Helicopter
- Womens Bay - Aircraft

General Information:

Recovery requirements have been defined by breaking the coverage into two separate categories. Those sites receiving first priority are deemed "Most Critical" to the public safety mission; second in priority are deemed "Critical" sites. These sites consist of key road junctions and highway avenues to and from the key junctions.

Lists are noted by event type. This list provides general guidelines where attention should be focused first, then what site comes next, etc., and should apply both to preventive and restoration efforts. Priority means, “If CNE-related action is being taken at site B and a problem is reported at site A (higher priority), then attention is shifted to focus on site A." The list is divided into event types, which could affect listed sites, either directly or indirectly. Remember, if a site not on the list is in eminent danger from an event, and the listed sites are not affected, then the site in danger becomes the "Most Critical" site.

1. Event Type: Volcanic Eruption/Ash Fallout

Most Critical Sites

Zone 1	Zone 2
Alcantra	Birch Hill
Atwood	Delta
Bailey Hill	Donnelly Dome
Diamond Ridge	Ester Dome
Pipeline	Ft Greely
Rabbit Creek	Peger Road
R1 North	Quarry Hill
Seldovia (H)	
Seward	
Ski Hill	
Sterling	

Critical Sites

Zone 1	Zone 2
Anchor River	Harding Lake
Blueberry	Independent Ridge (H)
Cooper Mountain (H)	Pole Hill
Girdwood	Reindeer Hills (H)
Hope (H)	
Kasilof	
Moose Pass	
Nikiski	
Ninilchik	
Pillar Mountain (H)	
Portage	
Silvertip (H)	

Summit Lake (H)
Sunnahae (H)
Whittier
Willow Mountain (H)
Wolcott Mountain (H)
Womens Bay (A)

2. Event Type: Earthquake

Most Critical Sites

Zone 1	Zone 2
Alcantra	Birch Hill
Atwood	Donnelly Dome
Bailey Hill	Ester Dome
Diamond Ridge	Ft Greely
High Mountain (A&H)	Garner
Pipeline	Nenana
Rabbit Creek	Peger Road
R1 North	Quarry Road
Saddle Mountain (A&H)	Reindeer Hills (H)
Seldovia (H)	Yanert
Seward	
Site Summit (H)	
Ski Hill	
Sterling	
Valdez	

Critical Sites

Zone 1	Zone 2
Anchor River	Black Rapids
Blueberry	Canyon Creek
Cooper Mountain (H)	Harding Lake
Divide (H)	Independent Ridge (H)
Girdwood	Pole Hill
Haines (A&H)	Trims
Hope (H)	
Kasilof	
Moose Pass	
Nikiski	

Ninilchik
Pillar Mountain (A&H)
Portage
Silvertip (H)
Summit Lake (H)
Sunnahae (H)
Whittier
Willow Mountain (H)
Wolcott Mountain (H)
Womens Bay (A)

3. Event Type: Tsunami/Flood

Most Critical Sites

Zone 1	Zone 2 (Flood only)
Heney Range (H)	Birch Hill
Pillar Mountain (A)	Canyon Creek
Saddle Mountain (A&H)	Cathedral Rapids
Seldovia (H)	Ester Dome
Seward	Garner
Site Summit (H)	Nenana
Sitka (A)	Peger Road
Valdez	
Womens Bay (A)	
Whittier	

Critical Sites

Zone 1	Zone 2 (Flood only)
Atwood	Donnelly Dome
Diamond Ridge	Ester Dome
Divide (H)	Ft Greely
Portage	Harding Lake
	Quarry Hill

4. Event Type: Landslide

Most Critical Sites

Zone 1	Zone 2
Byers Creek (H)	Beaver Creek
Cooper Mountain (H)	Independent Ridge
Divide (H)	Reindeer Hills

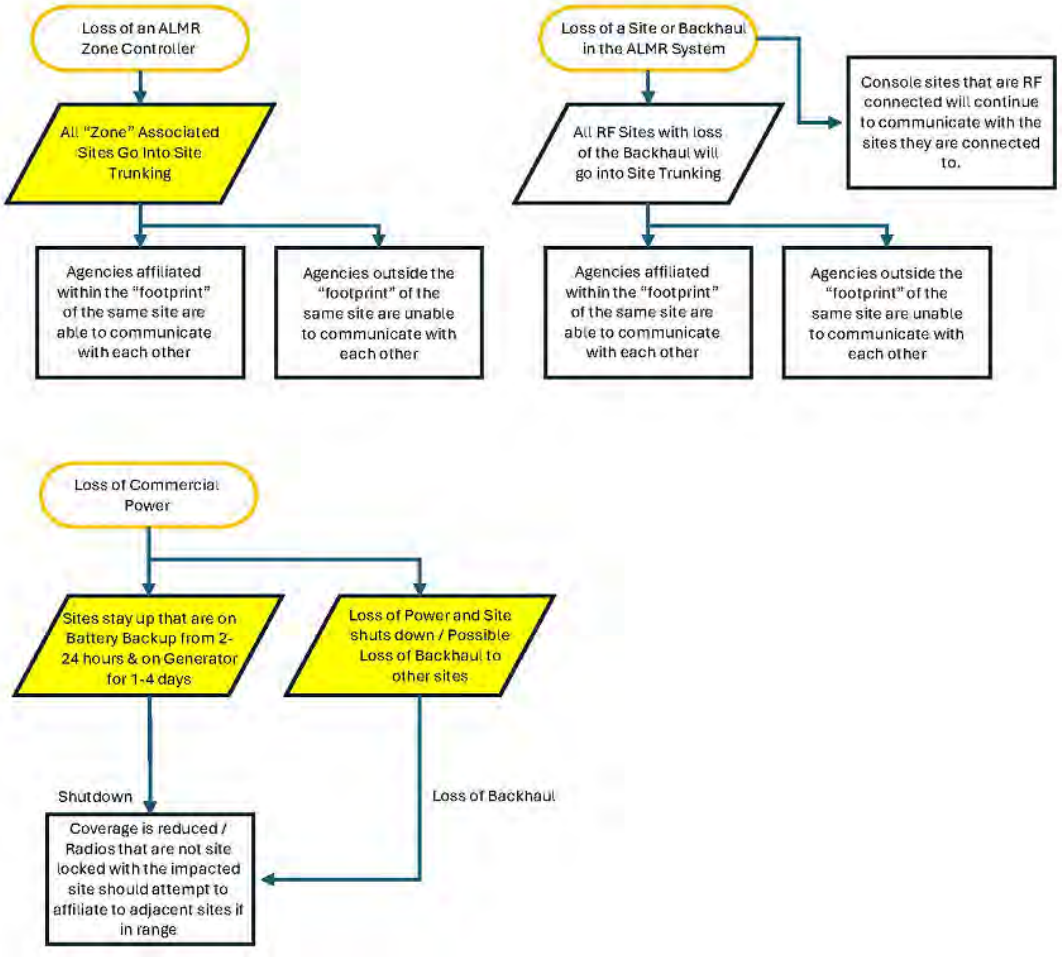
Ernestine (H)	Dot Lake
Haines (A&H)	Cathedral Rapids
Heney Range (H)	
High Mountain (A&H)	
Hope (H)	
Girdwood	
Lions Head (H)	
Pillar Mountain (A)	
Saddle Mountain (H)	
Seldovia (H)	
Silvertip (H)	
Summit Lake (H)	
Sunnahae (H)	
Tsina (H)	
Willow Mountain (H)	
Wolcott Mountain (H)	

Critical Sites

Zone 1	**Zone 2**
Atwood	Birch Hill
Site Summit	Ester Dome
Seward	Delta
Moose Pass	Tok
Ski Hill	
Diamond Ridge	
Portage	
Valdez	
Sawmill	
Bailey Hill	
Skagway (A)	
Lena Point (A)	
Auke Lake (A)	
Dimond Courthouse (A)	

NOTE: All ALMR sites are listed in Emergency Operations Procedure 300-5 at Appendix A.

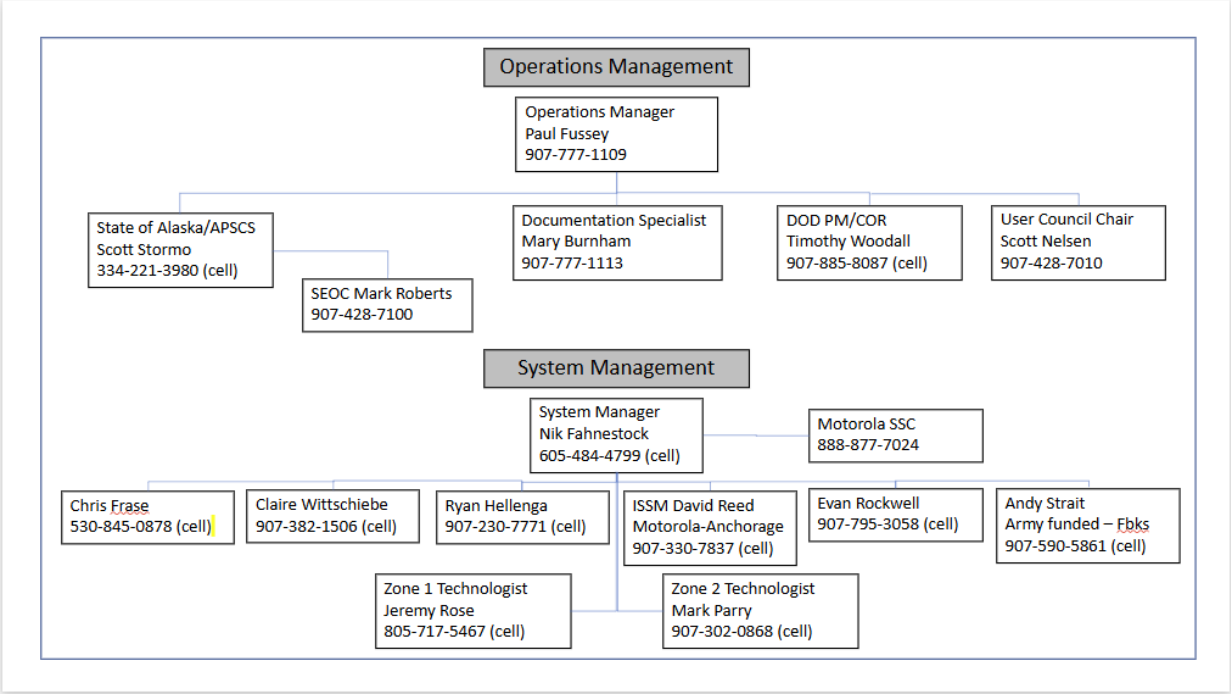
Appendix C – Vulnerability Analysis



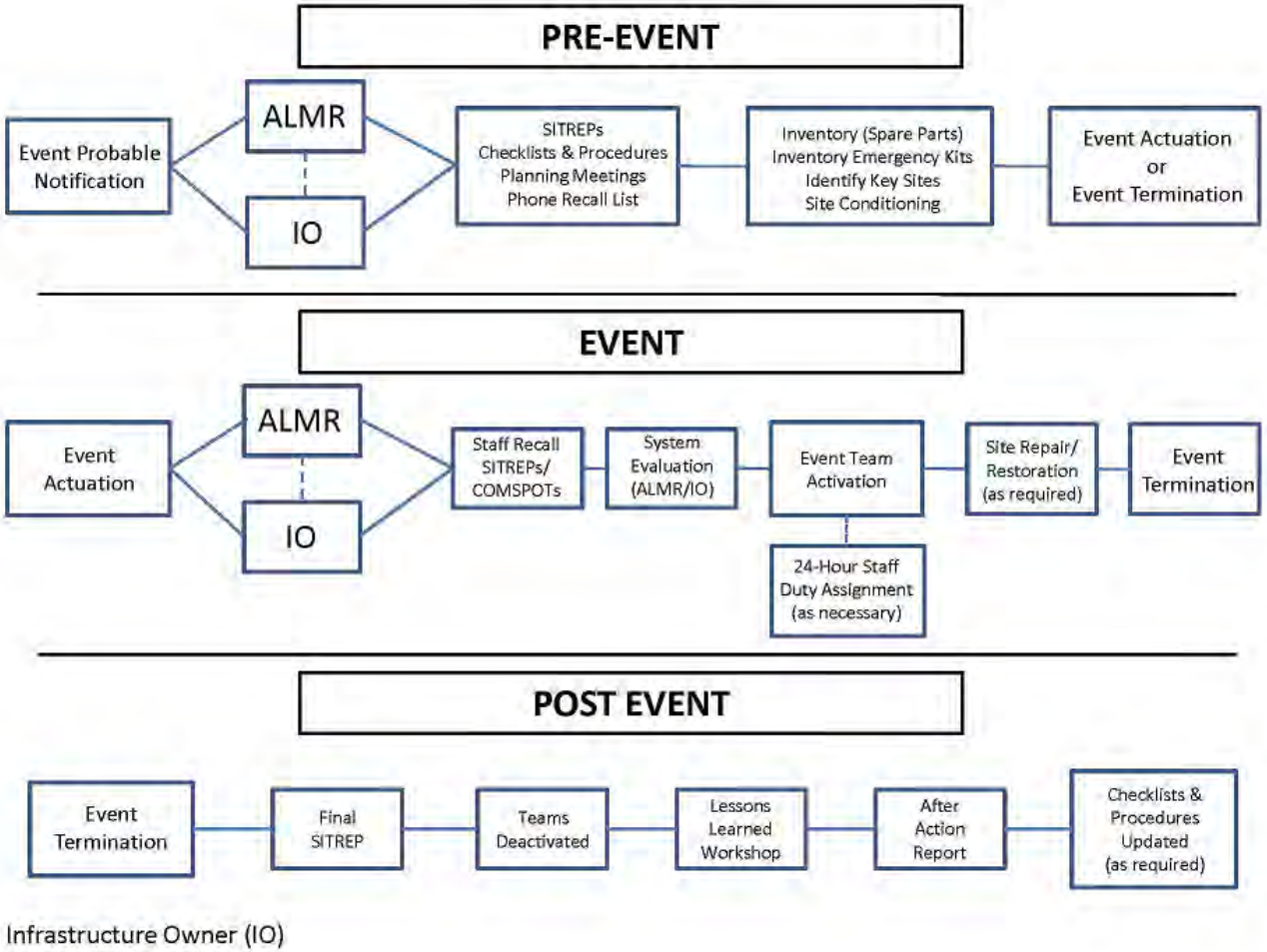
Appendix D – Communications Plan

If an event should occur during off-duty hours, the OM or SM, whoever receives the first notification, will contact the other and then proceed through their individual phone recall notification. The OM or SM may designate one of their staff to complete the notifications and report back on individuals not contacted during the recall.

All OMO and SMO (Tudor Road location) personnel should report to duty unless otherwise notified or unless transportation is impossible due to current infrastructure damage. Once on duty, and the situation has been assessed, the OM and SM will schedule work shifts, as appropriate. The following recall tree applies to ALMR only. SOA 7 DoD will develop and execute their recall tree internally.



Communications Plan (continued)



Infrastructure Owner (IO)

Appendix E – Reference Materials

Air Resources Laboratory (ARL) – Alaska Volcano Forecast Trajectories
Alaska Volcano Observatory (AVO)
Alaska Aviation Weather Unit (AAWU) – SIGMETS
Alaska Wildland Fire Information
Bureau of Land Management Alaska Home Page
Center Weather Service Unit (CWSU)
State of Alaska Home Page
West Coast and Alaska Tsunami Warning Center

Additional Resources:

Municipality of Anchorage Office of Emergency Management - https://www.muni.org/Departments/OEM/Pages/default.aspx
Recent Earthquake Activity - https://www.usgs.gov/programs/earthquake-hazards/earthquakes
Volcanic Ash - https://volcanoes.usgs.gov/volcanic_ash/