

MAUNA KEA EMERGENCY PROCEDURES

NOVEMBER 2013

INTRODUCTION:

Mauna Kea is an isolated work location, many miles from the nearest professional Emergency Medical Service (EMS). It is important that everyone working on the mountain understand the procedures that should be followed in case of an emergency. This document describes how to access the various services available, and also describes the limitations of these services on Mauna Kea. **The most important aspect of working on Mauna Kea is to minimize accidents and injuries through the use of safe work practices. This includes prudent driving and driving at or below the posted speed limits.**

PREPAREDNESS:

The bulk of this document deals with medical emergencies, but also addresses other situations that may occur. The primary source of first aid assistance must be the work location itself. Each facility should have staff trained in first aid and CPR and should maintain a stock of emergency first aid supplies and equipment. The equipment and supplies stored should be comparable to the level of training of the facility staff. It is suggested that each facility have quick access to an Automatic External Defibrillator (AED).

Each facility should establish a regular schedule for first aid drills, testing of emergency and safety equipment, and testing the use of the EEV (Emergency Evacuation Vehicle) and the equipment it contains.

MAUNA KEA RANGERS:

When fully staffed, there are a minimum of two Rangers on duty daily from 7:15 a.m. to 10:15 p.m. Based at the Visitor Information Station (VIS), the standard work day includes 4 x 2.0 hour summit patrols. The Rangers have emergency medical responder training and carry oxygen, back-boards, AED, splints, and assorted 1st aid supplies in their vehicles. They are available for assistance in an emergency, however, 911 should still be called immediately and before contacting Rangers for any serious emergency (i.e. cardiac arrest, altered level of consciousness, difficulty breathing, chest pain, severe bleeding, motor vehicle crash with significant damage, etc). The Ranger vehicles are clearly marked with "RANGER" on the fenders and an emergency light on the roof.

RANGER CONTACT: 934-9244 (VIS priority line 8:15am to 10:00pm)

The Rangers work closely with the VIS staff and a call to the VIS Priority Phone is the most reliable means of contacting them. The VIS staff will know the cell phone number of the Ranger on summit patrol. Remember, reception for these phones is limited on the summit. If it's between 7:15 and 8:15 a.m., contact the dining facility at 935-7606 and have them page a Ranger. Again, do not delay calling 911 for emergencies. Rangers will respond to assist when contact is made.

EMERGENCY EVACUATION VEHICLE (EEV):

If facility vehicles are inadequate, and an accident victim needs to be transported to an EMS location, the EEV is available. The purpose of this vehicle is to provide a convenient means of transporting an injured party down the mountain. The EEV is NOT equipped as an ambulance, but does have a portable stretcher that will make transport of a victim more comfortable. (Note: Because of the height of the van's floor two people are generally needed to put the loaded stretcher into the van.) It's also stocked with basic emergency first aid supplies, but should not be considered as the primary source of these items. Each facility is responsible for their medical supplies. In most cases, when the injured party doesn't need to be put in a prone position, it will be more convenient and faster to take the patient down in a facility vehicle, rather than in the EEV.

The EEV is equipped with a cellular phone (808)-430-7720. CELL PHONE COVERAGE IS LIMITED ON THE SUMMIT. Make sure the phone is activated whenever the vehicle is used. Keys to the EEV and instructions on its use are kept at each facility -- the location should be made known to all staff members. The EEV is a dark-red Ford Van with white lettering "Mauna Kea Observatories Emergency Evacuation Vehicle". It's stored on the pavement outside the Caltech Submillimeter Observatory (CSO).

Every use of the EEV must be reported to MKSS. Please read the instructions located at each facility about the EEV. Facilities are urged to provide hands-on training with their staff on the operation of the EEV.

Since the EEV is a unique vehicle with unique equipment, it is suggested that each facility take the EEV to their facility for some hands-on training. To do this, simply send a message out to the "road-conditions@ifa.hawaii.edu" email to inform other summit staff where the vehicle is in case they have an emergency.

LOGISTICAL CONSIDERATIONS:

COMMUNICATIONS:

911: The Island of Hawaii has a 911 emergency phone system. This number should be used for all emergency situations. It will connect you with the Hawaii County Police Department. After dialing 911, the 911 dispatcher will ask if you need police, fire, or ambulance. After relating your need, the 911 dispatcher will transfer your call to the appropriate agency. Make sure the extent of the emergency is made clear, so the appropriate resources are activated and Civil Defense is notified if appropriate. The County Fire Department will co-respond with Pohakuloa Training Area (PTA) Fire Department units. **Do not hesitate to call 911 during an emergency situation. The sooner you call, the sooner help can arrive. If in doubt, call 911.** The emergency units being dispatched can always be cancelled if not needed. Remember to stay on the line. Do not hang up until told by the dispatcher.

EMS RESPONSE:

Ambulances: Both the Hawaii County Fire Department and PTA have ambulances available. Since PTA is located at the 36 mile marker on Saddle Road, they can potentially arrive first at an accident scene (this has often been the case in actual emergencies). Hawaii County ambulance response time will vary depending on which ambulance is available to respond. PTA has a 4X4 ambulance that can reach HP or the summit if weather conditions permit. Personnel involved with an evacuation must always be prepared to drive the victim to Saddle Road or further. If the victim cannot be transported, and weather conditions are severe, arrangements may be needed to transport EMS personnel to the location of a victim. The Mauna Kea Rangers can possibly help with this task.

Helicopters (911): Ideally, helicopters can provide the fastest service during a summit emergency. However, their availability depends on weather and other factors. For this reason, all emergency plans MUST focus on evacuation to lower altitudes. If a helicopter can meet the rescue team at the summit, or on the way down, professional assistance will be available sooner, but you MUST be prepared to handle the emergency using ground based transportation.

If a helicopter is to be utilized, ensure the landing area is cleared of wind blown hazards and provide a call to 911 to relay wind speed and direction. Updates on weather conditions should be relayed through the 911 Dispatcher. Possible helicopter landing sites include the hunter's check station at Saddle road (Pu'u Huluhulu), the roadway at Hale Pohaku, the first parking lot at the beginning of the paved road, and the 2nd parking lot, just below the 13,000 foot level. See the map on page 9.

Hawaii County Fire Department Helicopters: The County of Hawaii has two helicopters that are small, not instrument rated, and not ideal for high altitude flights. They may be available for transporting EMS personnel to the summit, but only under ideal conditions. Generally, the helicopters have been used to meet at Hale Pohaku or Saddle Road. Helicopter service is available 24 hours per day with limitations – weather, visibility and pilot discretion. If helicopter service is desired, inform the 911 dispatcher when your emergency call is made.

Army National Guard helicopters: The Hawaii Island Army National Guard may have Blackhawk helicopters on site. If the emergency is serious, they can be requested through the County Civil Defense office (935-0031). If they are available and dispatched, the agency making the request may be billed for their expense/operational cost.

PTA Helicopters: Priority One is a contracted helicopter service providing EMS support when active training is being conducted at PTA and they cannot respond off the installation.

FIRE, SEARCH AND RESCUE RESPONSE:

Both the Hawaii County Fire Department and PTA have Fire Protection, Search and Rescue services available. The County Fire Department has dedicated specialized Heavy Search and Rescue Teams and HAZMAT Teams. However, no organization in Hawaii has winter weather rescue capability.

ACTION PLAN:

The plan of action must take into account the seriousness of the accident, medical abilities of the on-site personnel, the first aid equipment available, and the limitations described in the previous sections.

If professional EMS is needed, the primary plan should be to evacuate the victim from the site in a vehicle and meet the EMS personnel somewhere down the road. EMS personnel are available from both the Hawaii County Fire Department and PTA. PTA is closer to Mauna Kea, and can potentially reach Mauna Kea quicker than the County Fire Department.

Once an accident or illness occurs, it is important to evaluate the seriousness of the problem and adopt a plan of action. The standard sequence or response is **CHECK, CALL, CARE** (**CHECK** the scene for safety, number of victims, seriousness of the injuries; **CALL** 911 and direct others to assist; Provide **CARE** to the level of your training). In order to provide the correct level of response, it is important to understand the services available, their limitations, and the means of contacting them.

1. CHECK THE SCENE AND THE VICTIM in order to determine the extent of the injury or illness, possible cause of the incident, and any hazard still present. Does the victim have any visible wounds, is there any bleeding, is the victim in a seizure, and is the victim conscious? When checking an unconscious victim, the standard 1st aid inspection sequence is A,B,C (Airway, Breathing, Circulation).

2. CALL 911, and be prepared to provide the following information:

- a. Your Name, Location, and contact phone number.** (summit of Mauna Kea, Hale Pohaku, etc.).
- b. The number of victims involved.**
- c. A description of the circumstances** surrounding the injury or illness.
- d. A description of the victim's symptoms.**
- e. Let the 911 Dispatcher know how urgently EMS personnel are needed.**
- f. Describe the weather conditions.** If a helicopter flight is being considered, wind speed, cloud cover, and visibility are the most important factors in determining if a helicopter can be sent.

- g. Establish the prime meeting location as the 28-mile mark on Saddle Road.** Contact may be possible further up the road depending on the availability of a helicopter and the time needed on site to mobilize the victim. The EMS agencies have been sent a copy of the Access Road Map for reference. See below for specific meeting place information.
- h. Describe the vehicle that will be driven to the meeting place.** If the EEV is used, it is a dark red Ford van, with white lettering on the side; "Mauna Kea Observatories Emergency Evacuation Vehicle". There is a flashing red light on the top. Give the operator the cellular phone number: **(808) 430-7720**.

Meeting Place: Once contact has been made with 911, it is important to establish a primary meeting location. Because of the uncertainty of the helicopter service, **the primary meeting place should be the hunter's check station (Pu'u Huluhulu) at the Saddle Road 28-mile marker.** This is at the bottom of the Mauna Kea access road, about 30 to 40 minutes from the summit. An ambulance from Hilo and a vehicle leaving the summit will meet there at about the same time. On scene personnel should always make this their basic plan. Once mobilized, the actual meeting place might change depending on the availability of a helicopter, and the source of an ambulance. The cellular phone in the EEV should be very helpful for making these changes. The color of the EEV and the flashing red light should make it easy to spot on the road. Whenever the EEV is parked during an emergency, the hazard lights and flashing roof light should be kept on so that it is visible to other traffic on the roads – especially in fog or rain.

Hale Pohaku is the secondary meeting place. This site can be chosen if mobilization from the summit allows the ambulance to get a head start, or if a helicopter is dispatched.

The First Parking Lot on the Summit Road pavement is the third choice of a meeting place. This location might be chosen if it is known that a helicopter has been dispatched, or if it is felt that the patient couldn't survive the rough cinder road. For instance, it is difficult to perform CPR on a patient while driving on the rough road.

The fourth choice for a meeting place would be the second parking lot on the access road. This might be chosen if the helicopter pilot feels that this is the best place to land under the current weather conditions.

The fifth choice of a meeting place is the accident site itself, and should only be chosen if there is no means of transporting the victim without professional assistance.

A worst-case scenario might be when the patient cannot be transported down the road, a helicopter unavailable, and the ambulance cannot drive above HP. Someone from HP or the Visitor Information Station could then be contacted to drive the EMS personnel to the victim.

EMERGENCY SITUATIONS:

ALTITUDE ILLNESS: The low atmospheric pressure experienced at the summit, and even Hale Pohaku, can cause medical problems, generally called Altitude Sickness. The symptoms can include nausea, shortness of breath, headaches, and dizziness. Medical oxygen may help relieve the symptoms, but the best treatment for altitude sickness is to transport the victim down to a lower altitude. If this does not relieve the symptoms, the victim should be taken to a hospital, or 911 should be called. Severe cases of altitude sickness can result in pulmonary and cerebral edema, both life threatening conditions.

OXYGEN: Most of the facilities and the EEV are equipped with oxygen. Oxygen can be useful to temporarily relieve some altitude related symptoms and to increase the blood oxygen for those under respiratory distress. The use of oxygen has been shown to markedly improve both physical and mental function while working at altitude and may be used at a low flow rate routinely by those who wish to improve their performance. If CPR is employed on a patient, the use of oxygen for the caregiver will help reduce the fatigue brought on by the stress and exertion at altitude. If the patient is on oxygen, the dispatcher may be able to connect you to EMS to help determine the appropriate oxygen flow rate.

FIRE: One little known effect of the altitude is that moderately combustible materials at sea level often become more easily flammable at 14,000 feet because they vaporize more readily. The observatories are equipped with fire extinguishers. A small fire may be extinguished if action is taken quickly. However, fires often become out of control much faster than anticipated. Once there is a fire, every effort must be made to protect personnel within the facility. Each facility will have an evacuation plan which should be followed. Call **911** in order to have fire fighting and medical personnel dispatched to the site as quickly as possible.

WEATHER HAZARDS: In spite of its proximity to the lush tropical coastline, Mauna Kea is exposed to severe weather at the summit. During the winter, the temperature can reach below -10 degrees Celsius (14 F) with winds in excess of 100 mph. During these conditions, snow can accumulate on the roads very quickly, preventing evacuation. A winter storm can last as long as a week. **Entrapment on the summit during these conditions is life threatening as no organization on Hawaii Island has winter weather rescue capability.** OMKM Rangers & MKSS Staff will not go to the summit during winter storms so it is imperative all Observatory personnel evacuate before road conditions deteriorate. Although snow and ice are more likely to occur in the winter, snow can occur at anytime of the year. The Mauna Kea Weather Center provides accurate forecasts so that these conditions can be anticipated. <http://mkwc.ifa.hawaii.edu/>

THREATENING SITUATIONS: Although rare, there have been incidents on Mauna Kea where individuals have blocked roads, trespassed, and created a variety of disturbances. If such an event or situation develops, avoid confrontations even when inconvenienced. Try to be observant and make

mental notes that will help identify those involved. If vehicles are involved, the color, make, and license number will be very useful information. Call **911** any time there is a threat or civil laws are being broken. Write notes at the earliest opportunity to assist in any follow-up investigations that may take place. Inform the Mauna Kea Rangers about the situation.

ENVIRONMENTAL AND CULTURAL CONCERNS: Mauna Kea is located in a conservation district area. Every effort should be made to prevent damage to the environment and to protect cultural sites. Any time vehicles are seen driving off existing roads, or people are hiking off trails, the State Department of Conservation and Resource Enforcement (DOCARE) should be informed. (974-6208 during weekdays, ask operator for Enterprise 5469 after hours and on weekends/holidays. The Mauna Kea Rangers should also be informed.

COMMUNICATING WITH OTHER OBSERVATORIES: Page 11 is the **Mauna Kea Observatories Emergency Phone Numbers**. This contains contacts for all of the Observatory offices, summit facilities and includes after-hours numbers. Please call the other observatories when you become aware of a condition that may be a peril to them. An easy way is to send an email to road-conditions@ifa.hawaii.edu. A message sent to this address sends an email to each Observatory. This email is then distributed to selected Observatory staff. This email should be used to warn others about a hazard when an unsuspected condition has been encountered, such as an icy spot on the road or snowdrifts.

DISTRIBUTION: This memo will be updated and redistributed every year to all facilities, the County Fire Department, Hawaii Police Department, Civil Defense, and PTA. Please make copies and distribute among your staff. If you have suggestions for improving this document, please contact the MKSS Hilo office.

Phone: 974-4205, fax: 974-4215, email: shunter@ifa.hawaii.edu

EMERGENCY EVACUATION CHECK LIST

1. EXAMINE THE VICTIM AS PER FIRST AID TRAINING

2. CALL 911 WITH THE FOLLOWING INFORMATION

- A. YOUR NAME, LOCATION [AND CONTACT PHONE NUMBER]
- B. THE NUMBER OF VICTIMS
- C. ***DESCRIBE HOW THE ACCIDENT OR ILLNESS OCCURRED***
- D. DESCRIBE THE VICTIM'S SYMPTOMS
- E. INDICATE THE URGENCY NEEDED FOR TREATMENT
- F. DESCRIBE THE WEATHER CONDITIONS
- G. ESTABLISH THE PRIMARY MEETING PLACE (see below)
- H. DESCRIBE THE VEHICLE USED TO TRANSPORT VICTIM

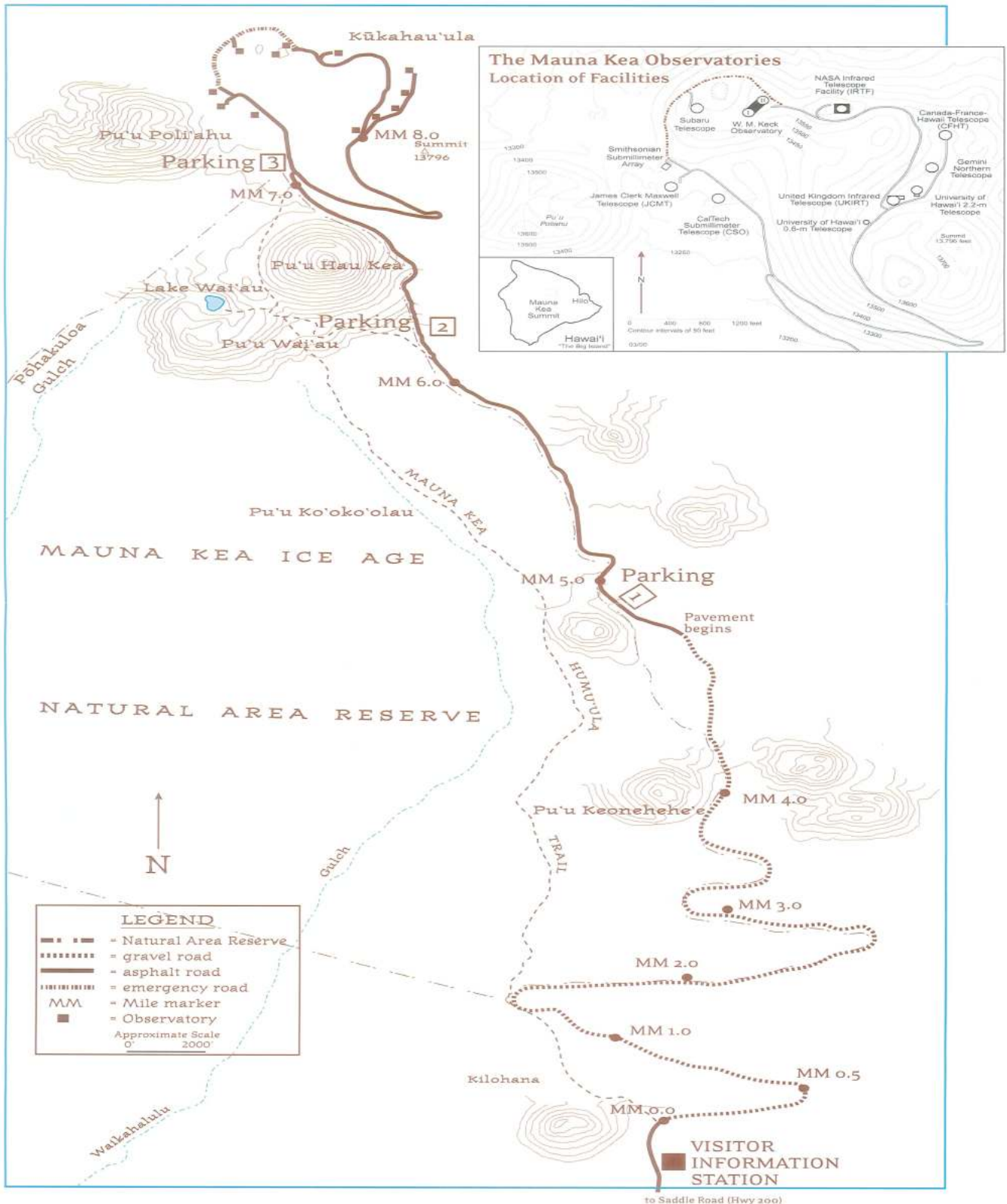
IMPORTANT PHONE NUMBERS:

911	Island Wide Emergency Services (Police/Fire/EMS)
(808) 430-7720	EEV Cellular Phone
935 – 0031	Hawaii County Civil Defense
961 – 8336	Hawaii County Fire Department
969 – 2448	PTA Fire Department (24 hrs/day)
969 - 2447	
969 - 2429	PTA Police (Department of Army) (24 hrs/day)
969 – 2430	
969 – 2400	PTA Post Headquarters
969 – 2401	
960 – 2820	Ranger Cellular Phones
960 – 1173	
960 – 3289	
961 – 2180	Visitor Information Station (9 a.m. – 10 p.m.)
934 – 9244	Visitor Information Station priority line (9 a.m. – 10 p.m.)

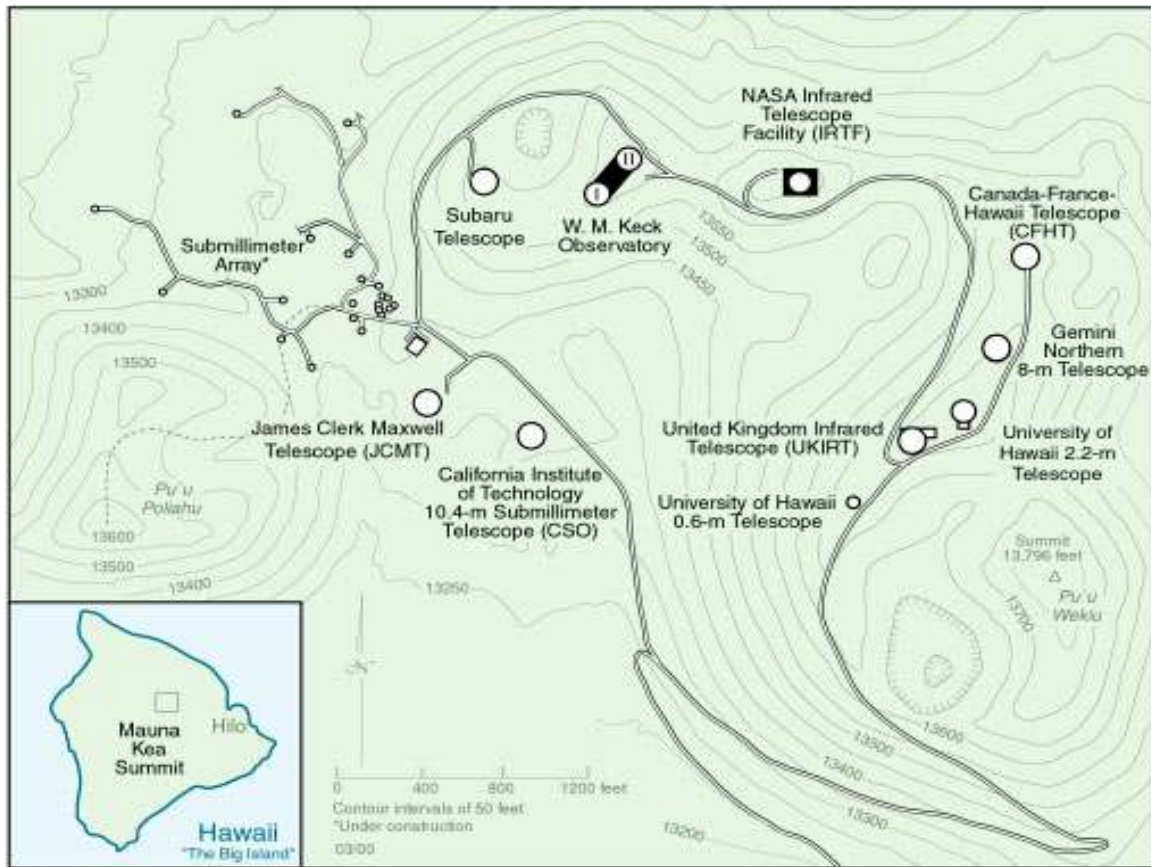
EMERGENCY MEDICAL SERVICES MEETING SITES:

- 1 - SADDLE ROAD (This is the most reliable site.)
- 2 - HALE POHAKU
- 3 - 1ST PARKING LOT (Park 1)
- 4 - 2ND PARKING LOT (Park 2)
- 5 - ACCIDENT SITE

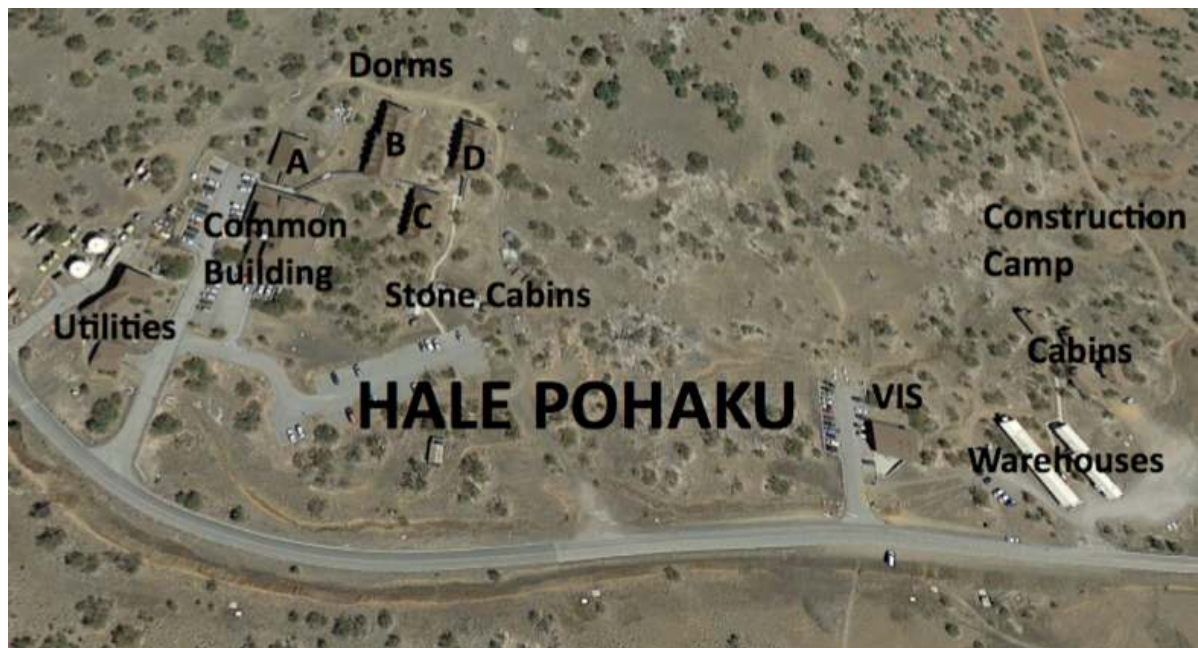
MAUNA KEA ACCESS ROAD MAP



MAUNA KEA OBSERVATORIES SITE MAP



HALE POHAKU SITE MAP



MAUNA KEA WINTER HAZARDS

Along with all of the general hazards encountered at the high altitude of Mauna Kea, there are additional hazards during the winter months:

WEATHER

Near the summit, winter weather can produce temperatures below 10 degrees Fahrenheit and high winds create chill factors as low as 40 degrees below zero. Snow and ice can rapidly make the road hazardous or impassable. Winter storms can last for over a week, and persons trapped on the upper roads are in a life-threatening situation.

DO NOT BECOME ENTRAPPED ON THE MOUNTAIN. EVACUATE WHEN ICE OR SNOW BEGIN TO FORM ON THE ROAD.

SNOW PLAY

The snow on the slopes of Mauna Kea often becomes covered with ice and there is no control of speed or direction when sliding. The bottoms of the steep slopes generally end in rocks. Striking these rocks has caused serious injuries and can be fatal.

BE CAUTIOUS WHEN SKIING, SNOW BOARDING OR OTHERWISE PLAYING ON THE STEEP SLOPES.

SUNLIGHT

The already strong ultraviolet (UV) sunlight at the summit is intensified further by reflections off the snow on the ground. The cool air temperature masks the sensation of sunburn. Even short exposure times can result in severe sunburn and snow blindness.

UV BLOCKING SUNSCREEN, SUNGLASSES, AND HEAD WEAR ARE ESSENTIAL SAFETY ITEMS.

FALLING ICE

In the winter, ice regularly forms on the observatory buildings and other structures. This ice melts in the daytime and large fragments fall to the ground without warning.

DO NOT APPROACH OBSERVATORY BUILDINGS AND OTHER STRUCTURES WHEN ICE IS PRESENT.

TRAFFIC

Stopping distances are greatly increased when there is snow or ice on the road. Drivers should expect to see a lot of vehicles and pedestrians on the road.

DRIVERS NEED TO DRIVE SLOWLY AND WATCH FOR PEDESTRIANS. LIKEWISE, PEDESTRIANS MUST LOOK FOR VEHICLES BEFORE STEPPING OUT ON THE ROAD.