

Institutional Animal Care and Use Committee

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IACUC GUIDELINE:	ANIMAL FACILITIES DISASTER CONTINGENCY PLAN
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## Introduction:

This plan pertains to unplanned events that disrupt normal business operations and could be expected to be detrimental to the good health and well-being of vertebrate animals under our care (i.e., USDA-APHIS definition of disaster and emergency). The plan consists of the following four major components: a comprehensive risk analysis specific to Animal Resource Center (ARC) and other campus animal holding facilities, a comprehensive risk analysis specific to the Sierra Nevada Aquatic Research Laboratory (SNARL), an assessment of internal capabilities, and an assessment of external capabilities (i.e., surrounding laboratory animal research facilities and vendors). The goal of this document is to summarize the disaster-preparedness and contingency procedures that have been established.

The 8<sup>th</sup> edition of the NRC *Guide for the Care and Use of Laboratory Animals* requires animal facilities to have a disaster plan that: “defines the action necessary to prevent animal pain, distress, and deaths due to loss of systems such as those that control ventilation, cooling, heating, or provision of potable water.” It also recommends “the colony manager or veterinarian responsible for the animals should be a member of the appropriate safety committee at the institution, and “official responder” in the institution, and a participant in the response to a disaster (Vogelweid 1998).” This document meets those requirements.

## Preparedness:

All individuals responsible for animal husbandry should know the locations of the following items in your facility:

- Emergency information: UCSB Campus Emergency Flip Chart, relevant safety plans, equipment manuals
- Entry and exit points - other than elevators
- Fire alarms and fire extinguishers
- First aid kits and, if applicable, who in your group has field first aid training

- Location of nearest Blue Light Phone (on campus)
- Emergency phone tree or equivalent system used by your facility
- Locations of animal food and emergency water supplies, as applicable, which must be rotated on a regular basis

On December 3, 2021, USDA-APHIS published a final rule lifting a previous stay (86 FR 68533) which requires all affected licensees and registrants to develop contingency plans for all animals regulated under the Animal Welfare Act in efforts to better prepare for potential disasters. The final rule prescribes requirements for developing and implementing contingency plans and training personnel at research facilities, including an annual review of this plan. The IACUC is required to maintain documentation of this review, as well as documentation of personnel training.

#### Common Emergencies That Could Occur at our Facilities:

A disaster risk assessment (see Appendix) identifies and considers the common disasters and emergencies that our animal facilities could likely experience. This risk assessment is reviewed annually, and updated as needed.

#### **Responsibility and Action:**

The goal of this plan is to protect animal health and well-being, and minimize business interruption through effective preparedness and response activities involving safety, medical, security, animal welfare, public relations, and utilities/maintenance functions. UCSB has adopted the California Standardized Emergency Management System (SEMS), which includes the Incident Command System (ICS) for the management of emergency incidents resulting from natural, intentional, or technological hazards. UCSB is also National Incident Management System (NIMS) compliant. The Attending Veterinarian (AV) is the official responder for the UCSB animal facilities, and is integrated into the University's Emergency Operations Center (EOC) that is responsible for strategic overview and coordination during any disaster. Specifically, the EOC is the central command and control facility responsible for carrying out emergency management, and ensuring the continuity of operation. Key campus emergency personnel and senior management, including ARC management and staff, are trained in Incident Command and their roles and responsibilities.

**Following an emergency or disaster that has affected on- or off-campus UCSB facilities, PIs and/or Facility Directors with a facility that houses vertebrate animals outside of an ARC vivarium must immediately contact the Attending Veterinarian (AV) and IACUC with the status of their animals and facility (e.g., number and species of animals present, animal injury or illness due to emergency, condition of the housing facility, husbandry staffing status, whether scientific integrity of ongoing studies may be maintained, etc.). PIs and/or Facility Directors should work with EH&S and the IACUC to develop a risk assessment of their housing facility (based on the Comprehensive Risk Analysis section below) to be able to quickly determine its status in an emergency.**

The AV is responsible for coordinating the efforts required to care for our laboratory animals in the event of a disaster, including:

1. Assessing the overall situation of the laboratory animals and the animal facilities
2. Directing the on-scene response activities
3. Requesting additional resources if needed
4. Interacting with campus-wide EOC command staff
5. Interacting with surrounding laboratory animal research facilities, outside vendors, and regulatory agencies
6. Documenting the disaster-related activities that pertain to the animals/animal facilities

### **Duty Checklist:**

1. Obtain situation briefing from the EOC
2. Don identification vest, carry portable radio
3. Direct the on-scene response activities (e.g., assignments of personnel, treatment of injured animals, coordination of facility repairs, etc.)
4. Update EOC command staff (e.g., incident commander, public information officer, etc.)
5. Interact with other UC campuses, outside vendors, and regulatory agencies (e.g., AAALAC International, USDA, OLAW, Department of Fish and Wildlife)
6. Document the disaster-related activities (e.g., documentation of notification of scientific personnel, documentation of treatment/euthanasia of animals, etc.) Use EOC forms to document personnel time and to request resources from the EOC. EOC forms are included in the appendix.

Dr. Manuel Garcia, the ARC Director and AV, is the official responder for the UCSB centralized animal facilities (ARC). Should Dr. Garcia not be able to reach the campus in the event of a disaster, then the normal chain of command would apply (i.e., Manager, ARC). The procedures for contacting the AV and the back-up veterinarian are included in the appendix.

### **Training**

The following personnel must read this Guideline and complete the course on Disaster Contingency Planning for Research Animal Facilities through the UC Learning Center (UCLC):

- Animal care staff (i.e., those providing husbandry for animals)
- PIs/Directors of centralized housing facilities (i.e., ARC, REEF, EEMB Aquarium, SNARL)
- PIs with animals housed in a satellite facility, regardless of whether they work directly with those animals or not

Any significant changes to this plan as a result of the annual review, or otherwise, must be communicated to animal users through training (i.e., rereading this Guideline and retaking the UCLC course) conducted within 30 days of making the changes. A sample log sheet for tracking the trainings for animal users is available in the Appendices of this guideline.

## Comprehensive Risk Analysis:

A comprehensive risk assessment was performed during the spring 2011 semi-annual Institutional Animal Care and Use Committee (IACUC) inspections. The risk assessment was updated in winter and spring quarter 2013, and in the winter quarter 2016. The risk analysis team consists of individuals from the IACUC and Campus Emergency Management. The risk assessment was reviewed in the Summer of 2019 in preparation for a planned electrical shut down for the entire campus, which was requested by Southern California Edison (SCE) in order to perform vital infrastructure repairs on the dedicated transmission line serving the campus.

The risk analysis rated risks facing animal facilities and considered the impacts, likelihood, and controls for each risk in several categories. Disaster and emergency categories that we could likely experience includes: natural disasters, safety and security risks, animal facility mechanical functions and other animal facility functions such as animal husbandry. A copy of the current risk assessment worksheet is included in the appendix.

The risk analysis process also provided the opportunity to identify the critical disaster-related services that would be required (e.g., animal transportation/relocation). In general, we identify the following two outcomes and rank the related conditions according to priority.

### 1. Scientific Integrity of Ongoing Studies Can Be Maintained - Preserve All or Most of the Animals

Within 24-48 hours of the emergency or disaster, it will become readily apparent whether or not the scientific integrity of the ongoing animal studies can be maintained. To do so will require most, if not all, of the elements listed below. For this contingency, it is assumed that the investigative staff will be available to continue with their studies.

- a. It has been deemed safe to access to the buildings containing the vivarium (i.e. green-tagged building).
- b. Food, water, and bedding needs must be met without interruption - requires back-up supply of food, water, and bedding either on- or off-site.
- c. Animal room environmental conditions must be maintained within specific parameters – requires electrical power distribution systems to power the ventilation fans, which require intact piping and ducts. May require immediate operation of chilled water pumps and intact low-pressure steam boilers to supply heating and cooling. Depending on the climate these systems may be brought on-line as needed.
- d. Light cycles must be maintained.
- e. Cage wash capabilities must continue with minimal interruption – requires electrical power, steam, water, and intact mechanical/sanitary systems.
- f. Ability to remove animal waste from colonies – requires wash down water and garbage removal capabilities.
- g. Ability to dispose of carcasses – requires power to carcass freezer, and offsite transportation by commercial waste disposal firm (i.e. Medical Waste Environmental Engineers).

## 2. Scientific Integrity of Ongoing Studies Cannot Be Maintained - Preserve Unique and Irreplaceable Laboratory Animals (UILA).

If the integrity of the scientific studies cannot be maintained (e.g., lack of scientific and/or support staff, lack of control of environmental parameters, etc.), then the focus will turn to preserving those species that are irreplaceable or necessary for critical research activities. Investigators are encouraged to consider cryopreservation of germplasm (embryos or spermatozoa) from such valuable animals as a safeguard against loss from a disaster or emergency. If such disaster or emergency does occur, and assuming that at least the ARC staff has access to the animals, then animals that cannot be protected from the consequences of the disaster or relocated will be humanely euthanized. In this scenario, most, if not all, of the following activities will be necessary.

- a. Food, water, and bedding needs must be met without interruption - requires backup supply of food, water, and bedding.
- b. Animal rooms could be maintained with air circulation only – requires electrical power for ventilation fans, intact electrical power distribution systems, piping, ducts, and fans.
- c. Lighting could be maintained from temporary light standards and generators.
- d. Ability to transport animals to offsite locations – requires activation of the assistance from other UC campuses under the Mutual Aid Agreement (see appendix).
- e. Ability to remove animal waste from colonies – requires wash down water and garbage removal capabilities.
- f. Ability to euthanize animals onsite, if removal, transportation, and relocation is not possible.
- g. Ability to hold/dispose of a large number of carcasses – requires emergency power to carcass freezer, or another method for onsite storage of carcasses (e.g., 55-gallon drums).
- h. Ability to easily identify the unique and irreplaceable laboratory animals. A unique identifier/label (“UILA”) should be located on the cage card or cages of all unique and irreplaceable laboratory animals.
- i. At SNARL, any wild animal that was collected/captured from locations near or similar to the environment at animal facility, and which according to conditions of the collection permit may be released back into the wild, will be released to the wild in the case of an emergency rather than being euthanized.

### ***Assessment of Internal Capabilities:***

Listed below is a current assessment of our internal capabilities and resources.

Employee Injuries/Availability/Skill Set: Attending to injured employees and protecting our employees from injury is the first priority in any disaster. Emergency medical services personnel are responsible for caring for injured employees during/after a disaster. The EOC is aware of the veterinary/medical expertise that exists within the ARC and would request assistance from us if necessary. First aid kits (i.e., for human use) are located throughout the buildings on-site and are regularly checked and restocked as part of routine facility inspections.

Many animal facility employees live in nearby communities and can be expected to reach the animal facilities in a reasonable length of time after a disaster. To aid in their decision on whether or not to come to work, UCSB has an emergency communications plan including a cell phone/email notification system (UCSB ALERT- <https://alert.ucsb.edu>), and a toll free emergency number (1-888-488-UCSB). UCSB also can use the UCSB home page (<http://www.ucsb.edu>) as an emergency blog when needed.

At SNARL, both the researchers working with the animals and reserve staff lives onsite and are available instantly in a disaster.

### **Current Official Responders:**

- An up-to-date list of official responders for animal facilities is maintained by the UCSB IACUC and is available to the EOC. The AV is one of many official responders.

Working in pairs if possible, the AV and personnel in the animal facilities will assess the condition of all of the animals as soon as access to the animal facilities is allowed. All animals suffering from injuries will be triaged, and treated or euthanized as necessary.

Once the initial evaluation and treatment of animals has been accomplished, veterinary support efforts would be directed to contacting investigators and obtaining permission to euthanize animals on studies that had been compromised due to the loss of scientific integrity (e.g., animal injury/health concerns and/or the inability to dose and/or collect data at appropriate time points). The AV would oversee the euthanasia of these animals as well.

A separate plan for dealing with anesthetized animals during an evacuation has been developed.

- See "Aseptic Rodent Surgery and Postoperative Care"

The weekend/holiday schedules, emergency telephone numbers, pager numbers, and procedures for contacting animal care personnel are posted in all animal facilities and maintained by the IACUC. In the case of the ARC, the largest of all campus animal facilities, the weekend and holiday schedule is posted on the main ARC office calendar in Bio2 room 6181. Every Friday the weekend care information is posted on the office board along with emergency back-up contact. Emergency telephone numbers are posted in the main hallways of the Bio2 and BioEngineering (BioE) vivaria. These numbers are distributed to key individuals anytime there is an update. Security also maintains updated copies of these numbers/procedures.

### **Animal Drinking Water:**

The Goleta Water District (GWD) supplies all domestic water for the campus. The GWD receives water from Lake Cachuma, for which the water level is monitored and controlled by the State Water Board. Water is pumped to the Corona Del Mar Treatment Plant where it is treated and distributed by the GWD. For contingency planning, the GWD has existing wells and reservoirs to augment supply if needed. Goleta Water also has system ties with Santa Barbara that can supply additional water if necessary. Water is supplied to the campus via two, 10-inch water services

from the GWD. The services are located at: Mesa Road/Los Carneros Road and El Colegio Road/San Clemente Housing.

Potable drinking water is supplied to our laboratory animals in pouches from the Hydropac™ system, water bottles, or from a recirculating automatic animal watering system (AWS). Emergency power is provided for the controls and the distribution pumps and the recirculating pumps and UV sterilizer of the AWS. In addition, an emergency supply of Hydropac™ pouches are stored in the Bio2 and BioE vivaria. The AWS in BioE has a reservoir capacity between 200 – 350L. Combined this water supply is sufficient to sustain the current animal population in the ARC for approximately 2 weeks.

Potable drinking water is supplied to the wild rodents housed at SNARL through water bottles. Potable drinking water is supplied from a well that is equipped with backup power, and in the event of an emergency or utilities disruption (i.e., no power or municipal water) drinking water can continue to be supplied to the animals.

### **Aquatic Animal System:**

For zebrafish and *Xenopus* frogs housed in the Bio2 vivarium, industrial water is purified and conditioned by reverse-osmosis, mechanical and activated carbon filtration, and ultraviolet sterilization before it is delivered to the recirculating aquatic housing systems. Emergency power is provided for all components (pumps, UV sterilizers, heaters, and chillers) in these aquatic systems.

For the mosquito fish and dwarf frogs housed in a lab in the Chemistry Building, domestic or municipal tap water is used to fill the 60-gallon aquarium housing the animals. This is a closed or static aquatic system, and the appropriate water quality conditions are maintained by a recirculating pump, submersible heater, and mechanical, chemical, and biological filter system. Emergency power is provided for all components (pump, heater, and lights) of this aquatic system.

For amphibians housed in the Bldg. 544, Room 2245 satellite facility, purified drinking water (e.g., Nestle) is stored in the laboratory and supplied to the individual tanks containing the frogs. A 2-4 weeks supply is maintained at any given time.

For fish and amphibians housed in the SNARL facility, continuous flow of water through the tanks from Convict Creek is assured, because the gravity feed water delivery system will run without power.

### **Seawater System:**

Fresh seawater is provided for all marine fish and invertebrates. The UCSB seawater system is an open flow design, meaning that water is brought in from the ocean, filtered, supplied to aquaria, and then returned to the ocean. The seawater intakes are located a half-mile offshore, 60 feet deep. Approximately 70% of incoming seawater is filtered to 20 microns using gravity fed sand, rock, and gravel filter beds. The remaining 30% of raw seawater provides filter-feeding organisms

with a food source. Researchers can use filtered seawater, raw or both in their research aquaria. After filtration, water is pumped to various buildings on campus that house seawater space. After passing through individual buildings and the aquaria within, seawater is collected and discarded into the campus lagoon or directly back into the ocean.

The sea water intake system has two pumps located in Bldg. 502, and a dedicated emergency generator, and remains operational during a power failure. The seawater for Bio2 is supplied by head tanks located on the roof of MSRB (Bldg 520) and are filled by a single pump located in the sea water filtration building 205. The majority, if not all, aquatic animal facilities use a flow-through system; therefore, continued operation of the seawater flow will maintain animal health and well-being during a power failure in any building connected to the seawater system loop. The campus seawater system is also hooked up to a Metasys alarm that notifies PF in the event of a seawater outage or other mechanical issue. PF then notifies the collector/naturalist of the problem.

### **Animal Food and Bedding:**

Combining what is stored in the animal feed and bedding room with what is stored in the individual animal rooms, there is enough food onsite to last for approximately seven days. Bedding changes could be reduced such that the amount of bedding on hand would last for a couple of weeks.

The EEMB Aquarium Facility maintains a minimum of one month's supply of frozen squid to feed the carnivores and two weeks supply of kelp to feed the herbivores.

The Bldg. 544, Room 2245 satellite facility stores enough food to last for approximately two weeks. However, in the event of an emergency or disaster as long as the animals have access to clean water they can go without food for several weeks.

The REEF maintains enough frozen stock (sardines, squid, mussels) for its temperate tanks to last 3-5 days in the event of a disaster (that would lead to power failure). For the tropical tanks, a stock of mixed krill, mussel, arctipod, and Mysis is maintained that would last 3-5 days in the event of a disaster. Thereafter, tropical fish could be fed dried flake food for approximately 2 weeks.

At SNARL, each PI will typically maintain enough feed and bedding (rodents only) in the animal housing area for the species being housed. In the Animal House, where wild rodents are housed, the PIs will maintain enough pelleted feed and bedding for the wild rodents to last 10 days. The aquatic animals that may be housed in the Fish House will have different food requirements depending on the animal species; however, here to the PIs will typically maintain enough feed (e.g., chow for fish, crickets for frogs) for the aquatic animals to last 3 days.

### **Sanitation:**

Cage washing capabilities in the ARC exist in both the Bio2 and BioE vivaria. No automated cage washing capabilities exist in any of the satellite animal holding facilities. In the event that these mechanical systems (e.g., cage washer, autoclave, boilers) in the ARC are not operational, then

limited manual sanitation could be performed using chemical disinfectants that are stored on-site. Under these circumstances the sanitation frequencies would be reduced such that only a limited amount of cleaning (i.e., no cage exchanges, limited use of bedding, etc.) could be performed.

### **Euthanasia:**

Rodents - Carbon dioxide sources (compressed gas cylinders) are located throughout UCSB and available to the ARC. In addition, the ARC maintains its own limited supply of carbon dioxide. Between the gas cylinders stored in Bio2 and the ARC, there should be enough carbon dioxide available to euthanize the entire rodent population, if needed. At SNARL, rodents are not housed year-round. During the active field study season (Spring and Summer) when the rodents are housed in the Animal House, the PIs maintain a supply of isoflurane sufficient to euthanize the wild rodents being housed, should the need arise (i.e., during an emergency).

Large animals – the ARC maintains enough injectable euthanasia solution in a locked cabinet in the Bio2 vivarium to euthanize all large animals in our colony, if needed. The volume necessary to euthanize all of the guinea pigs, rabbits, and large animals on-site is recalculated each year to ensure an adequate supply.

Aquatic animals – the facilities where aquatic animals (fish and frogs) are housed maintain enough MS-222 to euthanize most aquatic animals in their colonies, if needed. Initially, fish (temperate species) maintained in the REEF would be returned to their natural habitat, if permitted by the permit. If this is not feasible, the responsible parties would contact the AV and coordinate the euthanasia of the animals housed at these facilities. At SNARL, aquatic animals (fish and frogs) are not housed year-round. During the active field study season (Spring and Summer) when the aquatic animals are housed in the Fish House, the PIs maintain a supply of MS-222 sufficient to euthanize the animals being housed, should the need arise (i.e., during an emergency).

### **Carcass Storage/Disposal:**

Carcass storage is available in large chest freezers in the following locations: Bio2 vivarium – 6200 and 7100 hallway, and BioE vivarium – room 0302. These freezers are connected to emergency power. A licensed medical waste hauler (i.e., Stericycle) currently handles carcass disposal.

In the event of a major disaster, the various freezers in the laboratory buildings on campus could be used for carcass storage. Many of these freezers are connected to emergency powered outlets.

At SNARL, animal carcasses are double-bagged and picked up by Mammoth Disposal for standard disposal at the Benton Crossing landfill. In the event of a major disaster, the various refrigerators and freezers in the laboratory building at SNARL could be used for carcass storage. All of these refrigerators and freezers are connected to emergency powered outlets

### **Animal Transportation/Relocation:**

UCSB vehicles could be used to transport animals, supplies, carcasses, etc. between the various animal facilities in the event that only certain animal facilities were affected. Additionally, unique and irreplaceable laboratory animals could be transported to other UC campuses through the UC-wide Mutual Aid Agreement (see appendix).

### **Air Handling/HVAC:**

Outside air is filtered to Minimum Efficiency Reporting Value (MERV) 15 standards, then pressurized using direct drive fans and delivered to the supply ducts. The cooling coils are connected to the campus chilled water loop, which is not connected to emergency power. BioE has a backup chiller that is connected to emergency power. The hot deck coils are supplied by the building heating boilers. The local climate in Santa Barbara is temperate, and therefore the HVAC systems can maintain acceptable temperatures in the animal rooms without the chillers most of the year. The temperature of each occupied animal room is regulated by Direct Digital Controllers controls and monitored by the Campus JCI Metasys System, which has remote alarming (SMS) capabilities and ARC and PF staff are immediately notified of temperature problems in animal housing rooms. The Metasys system is connected to emergency power. The building Ethernet switch for Bio2 is not currently connected to emergency power. The Uninterruptable Power Supply (UPS) powering this switch lasted for 2 hours during the scheduled power outage in September 2019 before shutting down. A current phone list of ARC management personnel is maintained in the police dispatch center. The site-wide utilities group has a swing shift to repair any mechanical failures/difficulties should they arise. In these instances, police dispatch notifies the utilities department concerning any requests.

The Animal House at SNARL has walls fans, a propane heater, and an air conditioner to maintain the appropriate environmental conditions. The large propane storage tank and 40 kW propane generator ensure that these system can operate for up to 14 days in the event of a power failure.

### **Illumination:**

In the ARC, lighting in the animal rooms of the Bio2 vivarium is controlled by individual room timers, which are set and maintained by the ARC. In the BioE vivarium the lights are controlled by the building-wide electronic lighting control system, which is maintained by FM. During an electrical power outage, lighting in the animal rooms may be temporarily interrupted, but should be restored when the emergency power kicks in. In Bio2, the animal room light control systems are independent and maintained by individual battery backup located in each timer so that the desired light cycle is generally maintained after normal power has been restored. In BioE, the lighting control system will have a UPS battery backup.

In the Animal House at SNARL, lighting is controlled by a light timer, which is set and maintained by the PI or SNARL facility Director. During an electrical power outage, lighting in the animal room may be temporarily interrupted, but should be restored when the emergency power kicks in.

In the satellite facilities, illumination is provided partly or completely by natural light. Furthermore, lighting control by artificial means is not a requirement for appropriate care or experimental use of these animals (birds, fish, amphibians).

Flashlights and emergency lights on battery power are available in all animal holding areas for personnel safety.

### **Steam:**

Dedicated steam boilers provide the steam source for the ARC cage washers, autoclave and humidifiers in both the Bio2 and BioE vivaria. The boilers in each animal facility are monitored by the Campus JCI Metasys System and are supplied by the emergency power system.

### **Electrical Power:**

UCSB owns and operates its own primary electrical distribution system. The campus electrical distribution circuits are designed and operated as a loop (versus traditional radial) system and have a dedicated fiber optic system which monitors the operational status of the system and provides alarm status in the event of a system problem. Building power is supplied from both sides of the loop simultaneously. This allows the building to continue to operate under normal conditions in the event of a circuit fault. The system will recognize the faulted condition, clear and isolate the fault within 0.1 seconds with no loss of power to the building. The Bio2 building is served by the Research South Feeder loop from a high voltage switch (SW-571) located in the basement of Bio2. There are (3) three unit substations which provide electrical service for the building: T571-1; 1500kVA 277/480 volt, T571-2; 1000kVA 120/208 volt and T571-3; 1000 kVA 120/208 volt. The transformers are located in the basement of the Bio2 building and provide power to two main electrical service rooms that are also located in the basement of Bio2 where electrical power is distributed throughout the building. The BioE building is served by the Central Academic Feeder loop from a high voltage switch located by the BioE Service Parking Lot on the northeast corner of the building. There is one unit substation serving the BioE building: T551-1; 1000kVA 120/208 volt which is located in the Main Electrical Room on the basement floor. There are alarms on critical equipment that will activate an alarm to Security and PF in the event of a power outage. The electric power to the vivarium controls critical environmental control systems including: the fan motors for the individually ventilated cage racks; pumps and filters for the aquatic habitat systems; and the biosafety cabinets.

At SNARL, electrical power is supplied by Southern CA Edison. Outages are uncommon. Backup power is supplied by a 40 KW generator fueled by propane from a 2500 gallon storage tank.

### **Emergency Power:**

The ARC maintains and regularly updates the electrical power requirements for each occupied animal room in both vivaria. The Bio2 building has an emergency standby diesel generator with the following rating: 500kW, 277/480 volt, which is located in the mechanical penthouse of the building. The generator has a belly tank with a capacity of 780 gallons of diesel fuel. In addition, there is a 2000-gallon diesel storage tank located on the ground level of the Bio2 site which

provides the generator with enough fuel to operate at full capacity for 80 hours. The generator starts automatically and transfers power to the emergency power system within 10 seconds after a power outage. The generator provides back up power to the critical animal facility systems including: exhaust and supply air fans, boilers, environmental control systems (Metasys), and outlets in the animal facility for critical equipment (e.g. IVC racks, aquatic systems).

The BioE building has an emergency standby diesel generator with the following rating: 1,000kW, 120/208 volt, which is located by the north Service Parking Lot. The generator has a tank with enough fuel to operate the generator for at least 72 hours at full capacity. Both the Bio2 and BioE emergency generators have been listed as "high priority" for the campus, so in the event of an extended catastrophic event, these generators will be refueled to maintain operation. The generator starts automatically and transfers power to the emergency power system within 10 seconds after a power outage. This generator provides back up power to critical animal facility systems including: exhaust and supply air fans, boilers, environmental control systems (Metasys), lighting for the vivarium, and outlets in the animal facility for critical equipment (e.g., IVC racks, AWS).

The emergency power systems are tested regularly, and the campus has the capability to re-fuel the storage tanks as needed during an emergency. The vivarium generators have a high priority for re-fueling during an emergency. The load on the automatic transfer switches was most recently measured in August 2019, and was at ~80% the capacity of the generator. Emergency power was available and delivered to the ARC systems without interruption during the planned 12-hr power outage on September 14-15.

The SNARL facility has 40kW propane generator and a 2500 gallon propane storage tank, which can provide emergency power for all electrical systems for approximately 14 days.

### **Security:**

In the ARC, access is controlled by an electronic system (Lenel Access Control), and the access control readers are on a battery powered back-up system. The battery life is dependent on usage, and the batteries are replaced on a regular schedule to ensure at least a 3-day minimum operating time. Each person working in the Bio2 and BioE vivaria has an assigned "keycard," which will access his or her work location exclusively. There are a minimum of two locked doors between the outside doors and any animal cage.

In the satellite facilities, access is controlled by a lock and key system. Each facility director, and facility personnel has a key to her/his satellite facility. Additionally, the AV has a key to each of the satellite facilities.

UCSB's police department is on duty 24 hours per day, and monitors campus activities after normal working hours. UCSB's police patrol all animal facility buildings after regularly scheduled working hours. Site security is controlled by the use of a card key system augmented by cameras and motion detectors.

In the event of an onsite emergency (e.g., intentional attack on an animal facility), UCSB employees are instructed to dial 9-911. This dedicated line is answered initially by police dispatch, who assess the situation and if necessary, connect with Occupational Health, Environmental Health and Safety, and the Incident Commander for a coordinated response. University phones are labeled with this emergency number.

SNARL is a remote facility with a perimeter fence and little traffic from the general public. Access to the animal holding rooms (Animal House and Fish House) is controlled by a lock and key system. The Director and members of the research team working on projects at SNARL have keys to the animal facilities. The Director is resident and patrols the compound.

### ***Assessment of External Capabilities:***

#### **Local Vendors:**

Replacement animals are available from the following local vendors: Charles River Laboratories, Inc. (Hollister, CA). Our primary food and bedding vendor (i.e., Newco) has a two-week inventory on hand for most feeds. Newco also normally has two loads (i.e., about a week and a half supply) on the road in transit to them at any time.

At SNARL, the animals are all wild-caught, and the PIs will either bring with them the supplies that they need from their home institution, and/or they may purchase the feed and bedding from a commercial vendor in the local area (i.e., Bishop).

#### **Outside Institutions:**

As part of the University of California organization, we also have the support of the other animal facilities in our organization (i.e., UCB, UCSF, UCLA, UCSB, UCD, UCI, UCR, UCSC, and UCM). These other sites have agreed provide us with supplies (e.g., food, bedding, etc.), animal transportation and housing, and support personnel in the event of a major disaster (see Mutual Aid Agreement in the appendix).

#### **Governmental/Regulatory Agencies:**

County: The Santa Barbara County Fire Department responds to campus emergencies. Fire Station 17 is the first responder, and is located on the UCSB campus. The Santa Barbara County Sheriff and the Cities of Goleta and Santa Barbara provide mutual aid to the UCSB Police Department as needed. These services are coordinated through the campus 911 dispatch system. The Santa Barbara County Office of Emergency Management maintains close working relations with the Campus Emergency Manager. The County maintains a website at <http://www.countyofsb.org>.

State: The State of California has an emergency plan that is maintained by California Emergency Services Agency (CAL OES). The plan is posted on their website at [www.oes.ca.gov](http://www.oes.ca.gov). Information can also be obtained at (916) 262-1843.

Federal: The Federal Emergency Management Association (FEMA) is responsible for disaster assistance at the federal level only if the area is declared a disaster by the State. Their website can be accessed at [www.fema.gov](http://www.fema.gov). They are headquartered in Washington DC (202) 646-2500 and have a regional office in San Francisco, CA (415) 923-7100.

AVMA: The American Veterinary Medical Association (AVMA) authors the AVMA Emergency Preparedness and Response Guide. Section I of this guide contains contact/resource lists for all types of disaster services. The guide also outlines services that the AVMA can provide in a disaster to help with the animals involved.

CDFG: The California Department of Food and Agriculture (CDFG) would need to be notified of any escaped primates and/or Xenopus frogs. They can be reached at (916) 654-1447 or [www.cdfa.ca.gov](http://www.cdfa.ca.gov).



UCSB 308 – Resource Request		How to use this form:			
1. Date: _____ 2. Time: _____		<b>Purpose:</b>	<ul style="list-style-type: none"> <li>To transmit any <i>personnel or resource request</i></li> </ul>		
3. Operational Period: _____		<b>When to fill out:</b>	<ul style="list-style-type: none"> <li>Anytime during the Operational Period</li> </ul>		
4. Section: _____		<b>Completed by:</b>	<ul style="list-style-type: none"> <li>Any EOC Section</li> </ul>		
5. Prepared by: Name: _____ Position: _____		<b>Approved by:</b>	<ul style="list-style-type: none"> <li>Section Coordinator</li> <li>Resource requests for personnel or large amount of resources must be approved by Branch-level Leader</li> </ul>		
6. Approved by: Name: _____ Position: _____		<b>Send to:</b>	<ul style="list-style-type: none"> <li>Branch-level Leader → Section Coordinator → Logistics Section</li> <li>Keep a copy in your Section Binder for future reference</li> </ul>		
Resource Order <i>(completed by requestor)</i>				Order Status <i>(Completed by Logistics)</i>	
Quantity	Detailed item description	Requested arrival date / time	Priority	Order number	Final Disposition
			<input type="checkbox"/> Urgent <input type="checkbox"/> Routine <input type="checkbox"/> Low		
			<input type="checkbox"/> Urgent <input type="checkbox"/> Routine <input type="checkbox"/> Low		
			<input type="checkbox"/> Urgent <input type="checkbox"/> Routine <input type="checkbox"/> Low		
			<input type="checkbox"/> Urgent <input type="checkbox"/> Routine <input type="checkbox"/> Low		
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			<input type="checkbox"/> Urgent <input type="checkbox"/> Routine <input type="checkbox"/> Low		
<b>Logistics Notes:</b>					
<b>Logistics Coordinator Signature of Approval:</b>				<b>Date / Time:</b>	

# UC SANTA BARBARA

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Institutional Animal Care and Use Committee

Santa Barbara CA 93106-5062

Tel: (805) 893-5855

Fax: (805) 893-2005

Email: [iacuc@lifesci.ucsb.edu](mailto:iacuc@lifesci.ucsb.edu)

<https://www.research.ucsb.edu/compliance/animal-subjects/>

## Emergency and Backup Veterinary Care Contact Information

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Animal Resource Center (ARC) personnel are available, on-site or on-call, and should be contacted according to the following process.

- During normal hours of operation (M-F 8AM-5PM)
  - To report an animal health disorder submit a Clinical Call form to any ARC staff, or call campus extension 2333 (ARC office) or 7344 (Campus Veterinarian).
  - In the event of a veterinary emergency immediately contact the Campus Veterinarian at extension 7344, or the ARC Manager at extension 3986, if the Campus Veterinarian is not available.
- Outside of normal hours of operation or Holidays
  - In the event of a veterinary emergency immediately contact the Campus Veterinarian (451-5931), or the ARC Manager (452-7716), if the Campus Veterinarian is not available. The ARC Manager will contact the back-up veterinarian, as needed.

ARC technicians have the permission of the Campus Veterinarian to euthanize an animal in the event of serious pain and distress, which cannot be treated/resolved by a licensed veterinarian. A licensed veterinarian has given appropriate training to these individuals.

<b>Veterinary Emergency</b>		
Primary Contact	Dr. Manuel A. Garcia	(805) 451-5931 CELL (805) 893-7344 OFFICE
Secondary Contact	Ronni Wynn	(805) 452-7716 CELL (805) 893-3986 OFFICE
(back-up veterinarian)	Dr. Julie Barnes	(805) 403-8606
<b>Facilities</b>		
	PF Dispatch	(805) 893-8300
After hours/weekends	Police Dispatch	(805) 893-3446
Primary Contact	Chris Kelsey	(805) 618-8768
<b>Security</b>		
	Police Dispatch	(805) 893-3446

Animal Facilities Risk	Impact	Likelihood	Control Effectiveness	Risk Rating	Comments
<b>Natural</b>					
<b>Natural Disasters</b>					
Earthquake	High	Low	Moderate	Potentially under-controlled	Building is structurally sound; the biggest impact would be from a disruption of utilities and sewage services.
Wildland Fire	High	Very low	Substantial	Adequately controlled	Aviary structure is at highest risk due to location and building materials.
Flood	Moderate	Very low	Substantial	Adequately controlled	No buildings that house animals are situated in flood-prone areas.
Tsunami/coastal flooding	High	Low	Moderate	Potentially under-controlled	A tsunami could close Hwy 217 and shut down sewer service.
<b>Safety and Security</b>					
<b>Safety and Security</b>					
Sabotage of research space, equipment, animals	High	Low	Substantial	Adequately controlled	Risk profile is fairly low and good security measures are in place.
Compressed gas explosion	Moderate	Very low	Substantial	Adequately controlled	CO2 and O2 tanks are secured to wall and are in good condition.
Computer network attack	Very low	Very low	Substantial	Adequately controlled	Campus IT security has good controls in place. (Nearly all security measures recommended by Kroll in a 2003 security risk assessment of Psych and Bio2)
Occupational safety issue	Moderate	Low	Substantial	Adequately controlled	Engineering controls are good, safety procedures are good, and there is adequate PPE available.
Breach in security of facility	Moderate	Low	Substantial	Adequately controlled	Facilities have adequate security measures.
Hazardous materials spill/release	Moderate	Very low	Substantial	Adequately controlled	Formaldehyde hazards and salmonella transmission hazards are well controlled.
<b>Animal Facility Functions-</b>					
<b>Animal Facility Functions- Mechanical</b>					
Ventilation/cooling system disruption	Moderate	Low	Substantial	Adequately controlled	Room temperatures are closely monitored, repair technicians are on-call, and room fans and portable A/C units are available.
Heating system disruption	Moderate	Low	Moderate	Potentially under-controlled	<b>The vivaria should have a redundant boiler system. The boilers and associated equipment (pumps) are not on emergency or back-up (double-check with FM). Portable electric space heaters are available, and could</b>
Water for cleaning-availability	Moderate	High	Moderate	Potentially under-controlled	Cage sanitation in Bio2 and Psych vivaria can not be performed without water.
Power outage	High	High	Substantial	Potentially under-controlled	There is a back-up generator that goes on automatically. <b>Recommend verifying generator capability and duration in Bio II and Psych buildings. Neither the rack washer nor</b>
Sewage service disruption	Moderate	Low	Moderate	Potentially under-controlled	If the campus lift station were inoperable the entire campus would lose sewer service. Waterless sanitation methods would need to be employed.
Solid or bio waste removal issue	Low	Moderate	Moderate	Adequately controlled	Freezers and refrigerators for carcass storage are on back-up power.
Loss of seawater system for marine tanks	Moderate	Moderate	Substantial	Adequately controlled	system has 2 pumps and a generator. some back-up oxygen systems are in place. <b>Verify if sea water systems are gravity fed and what flow rate</b>
Cage sanitation- loss of steam	Low	Moderate	Moderate	Adequately controlled	Without natural gas or electricity, the boilers won't work and they are not on E power. Loss of water into building is the biggest vulnerability.
Communication systems disruption	Low	Low	Substantial	Adequately controlled	ARC staff can communicate on campus via 800MHz radios. Staff are trained in how to gather emergency information from EOC.
Disruption of access to facility	Moderate	Low	Substantial	Adequately controlled	Access to campus from north is likely if 217 route is inaccessible.
<b>Animal Facility Functions-</b>					
<b>Animal Facility Functions- Other</b>					
Inability to provide veterinary care	High	Low	Substantial	Adequately controlled	The procedure for a back-up vet is established.
Inability to euthanize animals if needed	High	Moderate	Substantial	Adequately controlled	<b>The availability of euthanasia materials and methods for the satellite facilities must be verified.</b> The ARC maintains enough TMS to euthanize aquatic animals, and enough
Disruption in ability to provide animal husbandry	High	Moderate	Substantial	Adequately controlled	Animal facility employees are trained in emergency reporting procedures.
Accidental animal release	High	Moderate	Substantial	Adequately controlled	Several layers of locked doors in Bio2 and Psych vivaria contain animals. This is not the case in all satellite facilities. For example, in the Aviary, a damaged fence would result in the release of birds. In Noble Hall broken lab windows and damaged/broken primary enclosures could result in the release of frogs.
Shortage of animal food supply	Moderate	Low	Substantial	Adequately controlled	A 1-week supply of food is normally on hand in the ARC, and vivaria. <b>Recommend verifying food supplies in satellite facilities.</b>
Shortage of animal bedding supply	Low	Low	Substantial	Adequately controlled	Bedding supply is on hand, vendors and other UC's can provide.
Drinking water for animals-availability	High	Moderate	Substantial	Adequately controlled	Hydropac water purification machine needs water pressure, 2 weeks of stored water is on hand.

