



Animal Facility Emergency and Disaster Plan

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Animal Facility Emergency and Disaster Plan

1. Purpose

To describe and outline the plan of action for potential emergencies, events and disasters, which may impact the care or use of animals within the Animal Research Facilities at University of Massachusetts Lowell (UML).

2. Scope

The ability to respond and tend to emergencies, events and disasters is the responsibility of everyone and an organizational responsibility of the University of Massachusetts Lowell (UML).

3. Plan Statement

All personnel must comply with the UML Emergency Plan. The sections below detail how emergencies will be handled within the animal facilities.

4. Emergency Response Phone List (O = Office phone, C = Cell phone)

Emergency	Contact Name, Dept. and/or Company Andover Animal Facility	Contact Name, Dept. Lowell North & South Campus
Fire	Pull a “Pull Station” Lever UML Police Dispatch: 978.934.4911	UML Police Dispatch: 978.934.4911
Power outage HVAC Issue Water Interruption Flood	Ora Clinical (Ora) Hal Patterson, Landlord O: 978.685.8900 UML Police Dispatch Non-emergency: 978.934.2398	UML Police Dispatch Non-emergency: 978.934.2398 UML Facilities: 978.934.4890
Equipment Alarm	Mindie Howard, Animal Facility Manager: O: 978.934.2521 , C: 978.289.0411 Michael Centola, Director ORI: O: 978.934.3553 , C: 203.843.0536	Principal Investigator – see Appendix I Dr. Natalie Steinel C: 512.413.4119 Dr. Nicolai Konow C: 443.416.8632 Dr. Frederic Chain C: 978.932.6054 Dr. Bryan Black C: 980.241.6394 Dr. Chiara Ghezzi C: 617.417.8847
Severe weather Pandemic	UML Emergency Operation Center (EOC): 978.934.5500 UML website banner www.uml.edu	UML Emergency Operation Center (EOC): 978.934.5500 UML website banner www.uml.edu
Personnel Injury/Accident	UML Police Dispatch: 978.934.4911 Glenn MacDonald, Executive Director EHS O: 978.934.2632 , C: 978.804.5576	UML Police Dispatch: 978.934.4911 Glenn MacDonald, Executive Director EHS O: 978.934.2632 , C: 978.804.5576
Animal Pain or Distress	Dr. Scott Perkins - Attending Veterinarian (AV), Tufts University C: 617.947.5770	Dr. Scott Perkins - Attending Veterinarian (AV), Tufts University C: 617.947.5770



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Facility Hazardous Material Containment or Cleanup Chemical exposure Chemical spill	UML Police Dispatch: 978.934.4911 Glenn MacDonald, Executive Director EHS O: 978.934.2632 , C: 978.804.5576	UML Police Dispatch: 978.934.4911 Glenn MacDonald, Executive Director EHS O: 978.934.2632 , C: 978.804.5576
Radiation exposure Radiation spill	UML Police Dispatch: 978.934.4911 Dr. Steven Snay, Director Radiation Safety O: 978.934.3373 , C: 978.995.7730	UML Police Dispatch: 978.934.4911 Dr. Steven Snay, Director Radiation Safety O: 978.934.3373 , C: 978.995.7730
Bomb Threat/Shooter Break-in/Vandalism	Andover Police: 911 UML Police Dispatch: 978.934.4911 CBRE Management O: 978.683.5224	UML Police Dispatch: 978.934.4911
Activists, Protests, Picketing, Media	UML Media Relations team Jonathan Strunk – Executive Director of Communications O: 978.934.3332 Nancy Cicco – O: 978.934.4944	UML Media Relations team Jonathan Strunk – Executive Director of Communications O: 978.934.3332 Nancy Cicco – O: 978.934.4944

For ALL other Animal Facility Issues (room temperature variations, airflow abnormalities, equipment breakdown, etc.) occurring During Business Hours notify Mindie Howard, Animal Facility at 978.934.2521

Non-Emergency Contact Information

Animal Facility Manager	Mindie Howard	978.934.2521
Animal Care Technician II	Erica Giuffrida	978.934.3254
Animal Care Technician I	Erika Rondon	978.934.3252
Director Office of Research Integrity	Michael Centola	978.934.3553
Attending Veterinarian	Dr. Scott Perkins	617.947.5770
IACUC Chairperson	Dr. Tomas Wilson	978.934.4509
UML Police Director Communications & Security	Ken Wilson	978.934.2661
UML Environmental Health and Safety	Glenn MacDonald	978.934.2632

5. Overview of Animal Care and Support

5.1 Animal Health Checks and Health Maintenance:

Animals are checked daily to confirm they are healthy. Animal Facility Staff or other qualified personnel (i.e., Researcher, P.I., Student etc.) may perform these observations. For animal rooms housing radioactive animals the P.I. and their trained staff are solely responsible for daily health checks, health maintenance and husbandry. The Attending Veterinarian (AV) will triage sick or injured animals and determine a treatment plan in consultation with Animal Facility Staff. Disaster events in a research animal setting may cause the loss of room access, environmental control, or safe working conditions that limit animal care and veterinary service support. Direction in this situation is frankly stated in the following excerpt from the Guide for Laboratory Animal Care and Use (8th edition): “Animals that cannot be relocated or protected from the consequences of the disaster must be humanely euthanized.”

Conditions that may necessitate euthanasia after a disaster could include:

- Availability of feed, caging, environment, or other species-specific requirements.



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- Animals with life threatening injuries or conditions not responsive to recovery.
- Loose or unidentified animals
- Principal Investigator (P.I.) input, unless attending veterinarian determines suffering.

Although every attempt will be made to avoid mass euthanasia during or following a disaster, euthanizing injured/distressed animals in these situations may be the only way to reduce animal pain and suffering. University of Massachusetts Lowell does not have a back-up facility on/off campus prepared for the evacuations of all animals in the event of an emergency. However, evacuations may be considered based on the details of the disaster, type of animal, and feasibility of evacuation or relocation. The following priority list attempts to preserve animals necessary for critical teaching, research activities, or are genetically distinct or irreplaceable. The order of animals to preserve include:

- a. All animals used in teaching (if disaster occurs when classes are in session)
- b. Specially bred or genetically distinct animal lines that are irreplaceable. Three (if applicable) breeding pairs, or breeder individuals per line, will be preserved.
- c. Investigators working on extramural grants with guidelines for preserving equipment and data.
- d. Breeding pairs for other animal lines
- e. All other animals used in teaching or research.

Andover Facility - Animals not in a managed housing room at the time of an incident (e.g., animals removed for short-term procedures) are the responsibility of the P.I. who removed the animals and his/her staff. The P.I. will be notified by Animal Facility Staff in the case of an emergency and the P.I. must make the decision to relocate or euthanize said animals. Any animals that cannot be relocated, protected, or adequately maintained from the consequences of the disaster must be humanely euthanized. When appropriate, animals will be euthanized at the discretion of the Attending Veterinarian or designee in consultation with Animal Facility Staff.

North & South Campus Facility - Animals not in a managed housing room at the time of an incident (e.g., animals removed for short-term procedures) are the responsibility of the P.I. who removed the animals and his/her staff. Any animals that cannot be relocated, protected, or adequately maintained from the consequences of the disaster must be humanely euthanized. When appropriate, animals will be euthanized at the discretion of the Attending Veterinarian or designee in consultation with Animal Facility Staff.

5.2 Food and water supplies:

Food and water are critical to maintaining animal health. Having the appropriate food in adequate quantities for the species and research needs is one goal of this plan. If the usual food is not available, professional judgment will be applied to identify acceptable substitutes which are available. Potable water is especially important, as many animals can survive for several days with little food but may succumb within 1-2 days without water. Some species are especially sensitive to food or water deprivation (e.g., newborn rats and mice) and should be given special attention. If food and water cannot be adequately maintained, animals will be euthanized at the discretion of the Attending Veterinarian in consultation with Animal Facility Staff.

5.3 Sanitation:

Andover Facility - For purposes of animal health, animal welfare and support of research, adequate sanitation must be provided. Cages of some species must be changed often while others may go several days without inducing health or environmental problems. The goal of this plan is to approximate normal sanitation schedules with available resources. Increasing cage change intervals, spot cleaning instead of whole-cage changes, changing bedding instead of cage changes, hand washing some equipment, or



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deferring activities, such as floor mopping, may be required. The Attending Veterinarian and/or the Animal Facility Manager will decide which sanitation activities are performed to provide the greatest benefit to the animals if it is not possible to perform all normal activities due to disaster/emergency conditions. If adequate sanitation cannot be maintained, animals will be euthanized at the discretion of the Attending Veterinarian in consultation with Animal Facility Staff.

North & South Campus Facility - For purposes of animal health, animal welfare and support of research, adequate sanitation must be provided. Cages of some species must be changed often while others may go several days without inducing health or environmental problems. The goal of this plan is to approximate normal sanitation schedules with available resources. Increasing cage change intervals, spot cleaning instead of whole-cage changes, hand washing some equipment, or deferring activities, such as floor mopping, may be required. The Animal Facility Principal Investigator and/or Attending Veterinarian will decide which sanitation activities are performed to provide the greatest benefit to the animals if it is not possible to perform all normal activities due to disaster/emergency conditions. If adequate sanitation cannot be maintained, animals will be euthanized at the discretion of the Attending Veterinarian in consultation with Animal Facility Principal Investigator.

5.4 Environmental support (ventilation, temperature control, utilities):

Andover Facility - Maintenance of an appropriate environment is essential to the well-being of animals and for many research projects. Ventilation problems may include loss of or diminished air supply or exhaust, loss of pressure differentials in critical areas, unacceptable temperature variations, contamination with agents such as chemicals or smoke, or loss of utilities such as electricity needed for lights (e.g., maintain animal circadian rhythm light cycle) or powered equipment (e.g., hoods, autoclaves, ventilated racks). Ventilation problems are addressed by Animal Facility Staff in consultation with ORA personnel with goals of maintaining adequate air movement in animal housing spaces, sustaining air pressure differentials in all rooms, and keeping adequate temperatures as close to the acceptable range as is possible. The minimal standard is to prevent animal deaths or contamination of the environment. Maintenance of body temperature within normal circadian variation is necessary for animal well-being. Animals are housed within temperature and humidity ranges, of dry-bulb temperature mouse and rat 68-79° F (20-26° C), and relative humidity 30% to 70%. Dehumidifiers will be setup in the room by Animal Facility Staff when the humidity level in the animal room is above 75% for an extended period. Moderate fluctuations in temperature and relative humidity outside suggested ranges are generally well tolerated by most species commonly used in research if they are brief and infrequent. If environmental conditions cannot be adequately maintained animals will be euthanized at the discretion of the Attending Veterinarian in consultation with Animal Facility Staff.

North & South Campus Facility - Maintenance of an appropriate environment is essential to the well-being of amphibians, fish, reptiles and for many research projects. Ventilation problems may include loss of or diminished air supply or exhaust, loss of pressure differentials in critical areas, unacceptable temperature variations, contamination with agents such as chemicals or smoke, or loss of utilities such as electricity needed for lights or powered equipment (e.g., heat, aquarium bubbler or equivalent). Air issues are addressed by Animal Facility Principal Investigator.

Olsen 005 - see Appendix IIa for environmental support measures.

Olsen 603 - Fish and Amphibians are housed within a temperature range of 73-82° F. Habitat temperatures are maintained using a heater and under non-emergency conditions should not fluctuate beyond the optimal



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range. The facility is on emergency power and maintains heater temperature during short-term power failure. Poikilotherm animals such as fish can tolerate much lower ambient temperatures for extended periods of time in case of catastrophic power failure.

Amphibians are housed within a temperature range of 60–64° F, although able to tolerate much lower temperatures. Temperatures over 75° F can be fatal, animals should be moved, preferably to a cold-storage facility. Euthanasia may be needed at the discretion of the AV if unable to move animals.

5.5 Personnel to provide animal care:

Personnel with adequate training are essential to maintaining animal colonies. They may be unable to work in facilities due to damage or dangerous conditions, physical obstructions (snowstorm or chemical spill nearby), or interruption of work (bomb threat, picketing, etc.). The Animal Facility Manager or designee will arrange for available personnel to maintain animal health. Personnel may be asked to perform duties outside the scope of their normal responsibilities to protect animal health or well-being. The Attending Veterinarian and Animal Facility Staff will make this decision.

6. Natural Disaster

6.1 Advance notice of an emergency (severe weather):

Andover Facility - Prior to a winter storm or other predictable severe weather, when possible, rodent food hoppers shall be filled to the maximum and full water bottles provided the day before the expected severe weather. Additional water bottles will be prepared and stored in the animal rooms.

Generally, the amount of feed kept in-house (including food on cages, food in feed supply bins and food in the feed storage room) is projected to be an adequate supply to allow for any potential delays in feed shipment. Investigators will be notified as needed of any changes to feed and water deprivation schedules as related to their specific research protocols.

Loss of power is managed with the backup generator. If such a situation is likely during the workday, the Animal Facility Staff or designee will closely monitor weather conditions. Animal Facility Staff will assure all critical tasks are completed (feed, water, security of animals) before leaving the facility. In rare incidences, faculty/P.I. will be responsible for animal husbandry tasks for their animals. For after-hours issues with power outages, HVAC, water, etc., call ORA and they will contact the appropriate person.

North & South Campus Facility - Prior to a winter storm or other predictable severe weather, when possible, amphibians, fish, reptiles will be provided necessary essentials (feed etc.) the day before the expected severe weather.

Loss of power if such a situation is likely during the workday, the Animal Facility Staff or designee will closely monitor weather conditions. Animal Facility Staff will assure all critical tasks are completed (feed, security of animals) before leaving the facility. Faculty/P.I. will be responsible for the animal husbandry tasks for their amphibians, fish, reptile animals. For after-hours issues with power outages, HVAC, water, etc., call UML Facilities.

6.2 Earthquakes, Tornados:

Though infrequent, can cause significant disruption to animal care routines, limiting staff's ability to travel to the work site. When inside a building and an earthquake or tornado is occurring, TAKE COVER IMMEDIATELY. Get to the ground and stay away from external walls and windows. Find cover under a



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sturdy piece of furniture, when furniture is unavailable, crouch down against an interior wall and protect your neck and head with your arms until shaking stops. Then evacuate the building checking for hazards along the way and go to the designated meeting area.

Do not reenter building(s) until clearance has been granted by the structural engineer representative. Once reentry is granted perform triage of animals to determine most appropriate course of action (i.e., relocation within facility, euthanasia, and evacuation).

6.3 Animal Rights Activists (Protests, Picketing, Media, Vandalism, Bomb Threat):

In the event of protests or picketing (e.g., animal rights groups), animal facility personnel are to report to work as usual. In doing so, they are to avoid confrontations if they pass through picket lines or protest marchers. UML Media Relations will handle the dissemination of information and address questions about research activities.

Andover Facility - CBRE and UML Police will handle all security related issues and will increase security measures for all animal housing and support facilities while helping keep all facilities secure.

North & South Campus Facility – UML Police will handle all security related issues.

- **Animal health checks:** If the number of employees on site is decreased, priority is given to activities which directly affect animal health and welfare: health checks and treatments, feeding, watering, and maintaining minimal sanitation requirements.
- **Food and water supplies:** Food and water supplies on-site should not be affected. Closing the receiving docks and deferring delivery locations may be considered if the primary location is unusable. Similarly, if the normal waste pick-up procedure is disrupted, waste may be kept in the freezer room temporarily.
- **Sanitation:** Sanitation should proceed normally, assuming sufficient personnel are present. If staff shortages occur, sanitation will be prioritized as described in Animal Health Checks above.
- **Environmental support:** Environmental systems are not expected to be affected. If the environment is altered, as by sabotage, for example, the specific problem will be addressed as described in the section for that emergency.
Notify Animal Facility Manager (Andover), Principal Investigator (North & South Campus) of any theft or vandalism in the Animal Facility. Authorities will be notified as appropriate.
- **Personnel:** UML personnel are expected to report to work. UML personnel may be required to perform duties outside their usual responsibilities to preserve animal health.

Threat Bomb

Take all threats seriously!

Andover Facility Notify CBRE, UML Police and evacuate the building via evacuation routes posted in your area. Upon exiting the building proceed to the designated meeting area and report to your manager when you arrive.

North and South Campus Facility Notify UML Police and evacuate the building via evacuation routes posted in your area. Upon exiting the building proceed to the designated meeting area and report to your manager when you arrive.



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6.4 Fire

Evacuate the animal facility immediately via evacuation routes posted in your area. Upon exiting the building proceed to the designated meeting area and report to your manager when you arrive. Smoke, heat, and toxic gases from a fire are the most common cause of fire-related deaths and injuries. Concern for animals is secondary to human life, Do Not place yourself in danger trying to remove animals from the building.

Animals may be treated after the Fire Department (Andover or Lowell) approves the building for re-entry.

6.5 Pandemic

The UML Animal Researchers will regularly check and comply with guidance published by UML on their website www.uml.edu.

The Coronavirus outbreak represents a rapidly evolving situation and communication regarding changes in facility operations is important. Notice of operational changes will be emailed to Principal Investigators with animals in the facility; Principal Investigators are responsible for notifying their researchers/students.

Throughout the planning and execution of this plan and all other activities UML Animal Research have prioritized our obligations as follows:

1. Ensure the safety of all people, this includes employees, researchers, students etc.
2. Ensure the health and welfare of research animals
3. Ensure integrity, and success of UML animal research.

6.5.1 General Preparations:

While the animal facility maintains an adequate feed supply to meet the needs of any temporary disaster predicted, we have purchased additional feed, bedding, gloves, and cleaning supplies to cover a period of suspension of operations by the University. Enough CO₂ and cage washer chemicals are on hand for an extended period. All animal facility staff, principal investigators, and students are asked to take precautionary measures of washing hands when entering and exiting the animal facility. Standard PPE (as posted in the gowning area) is always required to access the animal facility.

6.5.2 University limitations for Animal Facility access and activities:

- Andover Facility - Animal Facility access:
 - Access to the Facility will be restricted to Animal Facility Care Staff, Faculty Principal Investigators and Trained Research Students currently on an approved IACUC protocol.
 - Personnel and External Researchers that have not had Andover Facility Training and do not have an active animal experiment will not have access to the animal facility.
- Animal husbandry activities:
 - Animal Facility Staff are considered essential employees and it will be necessary for them to come to campus to complete the animal husbandry tasks.
 - Work schedules and animal husbandry tasks will be coordinated between Animal Facility Manager and Animal Care Technician to assure that all critical tasks (feed, water, security of animals) are completed.
 - Adjustments to basic animal husbandry activities will be made as needed:



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- If one animal facility staff member is unable to work, the other animal facility staff member will concentrate on maintaining basic needs of the animals only; they will not be available to assist with research protocols. The working member will follow an abbreviated holiday and emergency operating procedures according to their physical ability to perform the tasks.
 - If both animal facility staff members are physically unable to work, the P.I.'s will be notified and they will be responsible for maintaining acceptable, albeit minimal, animal husbandry tasks until at least one animal facility staff member can return to work.
 - In the unlikely event that no faculty or animal facility staff can perform husbandry duties to meet the basic needs of the animals, consideration will be given to euthanizing those animals as described and prioritized in section 5 "Overview of Animal Care and Support".
- Research activity:
 - It will be at the P.I.'s discretion whether they halt their research and restrict their own and their researchers access into the animal facility.
 - Animal husbandry activities for these animals will continue as planned.
 - Animal care staff may not be able to assist with research protocols and procedures (including ordering animals).
 - No animals will be allowed to leave the animal facility.
 - Teaching activities:
 - No teaching labs involving live animals will take place.
 - Animal husbandry activities for these animals will continue as planned.
 - North & South Campus Facility - Animal Facility access:
 - Access to the Facility will be restricted to Faculty Principal Investigators and Trained Research Students currently on an approved IACUC protocol.
 - Animal husbandry activities:
 - Amphibian, fish, reptile animal Staff are considered essential employees and it will be necessary for them to come to campus to complete the animal husbandry tasks.
 - Work schedules and animal husbandry tasks will be coordinated by the Principal Investigator (P.I.) to assure that all critical tasks (feed, security of animals) are completed.
 - Adjustments to basic animal husbandry activities will be made as needed:
 - An animal staff member will concentrate on maintaining basic needs of the animals only; following an abbreviated holiday and emergency operating procedures according to their physical ability to perform the tasks.
 - When animal staff are not available the P.I. will be responsible for maintaining acceptable, animal husbandry tasks until one of their animal staff members can return to work.
 - In the unlikely event that the P.I. and animal staff members are not available to perform husbandry duties to meet the basic needs of the animals, consideration will be given to euthanizing those animals as described and prioritized in section 5 "Overview of Animal Care and Support".
 - Research activity:



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- It will be at the P.I.'s discretion whether they halt their research and restrict their own and their researchers access into the animal facility.
- Animal husbandry activities for these animals will continue as planned.
- No animals will be allowed to leave the animal facility.
- Teaching activities:
 - No teaching labs involving live animals will take place.
 - Animal husbandry activities for these animals will continue as planned.

6.5.3 Emergency Supplies:

Andover Rodent Facility - will keep on hand enough food, water/gel packs, and bedding to provide proper care for animals in the event of a temporary disaster. Additional supplies kept on hand include:

- Flashlight/lanterns w/batteries
- Space heater
- First aid kit
- Sanitation needs (e.g., paper towels, disinfectant, bucket)

Olsen 005 & 605 Aquatic Facility - will keep on hand enough food (provisioning over 2-3 months to adequately cover short-term emergencies. When necessary, food and other supplies will be sourced from a pet store.). uneaten food will be removed to ensure water quality.

Olsen 603 Amphibian and Fish Facility - will keep on hand enough food and habitat water supply to provide proper care for animals in the event of a temporary disaster.

7. Disaster Plan Training

PI's are responsible for providing training on the "Animal Facility Emergency and Disaster Plan (AFEDP-1)" to all personnel listed on their protocol(s). The PI's and personnel acknowledge training by submitting a completed IPTC-1 form to IACUC.

UML is prepared to respond to emergencies 24 hours per day, 7 days per week. If a major emergency affecting UML such as a tornado, picketing, or shooting occurs, UML Emergency Operations Center (EOC), and/or UML Police and/or Lowell Police will direct the University's emergency response. Specially trained response and support teams will be activated. The frequency of university-wide training is determined by UML Media Relations.

Andover Facility – Additionally emergencies specific to the Animal Facility will be coordinated with Animal Facility Staff and/or Attending Veterinarian and/or Ora and/or CBRE as indicated in this document. All personnel (Animal Technicians, P.I.'s, Researchers, Students etc.) approved to work/help on animal research projects will be oriented to the animal facility prior to working in the facility via the hands-on Andover Facility Training Appendix II.

North & South Campus Facility – Additionally emergencies specific to the Animal Facilities will be coordinated with PI's, and/or UML Facilities, and/or Attending Veterinarian as indicated in this document.

8. Responsibilities:

This plan is reviewed yearly by Andover Animal Facility Manager, Laboratory Principal Investigators of North & South Campus Facilities, Attending Veterinarian, Institutional Official and Health & Safety Office



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and updated by Andover Animal Facility Manager in consultation with the Director Office of Research Integrity.

The Director Office of Research Integrity at UML provides resources and guidance to the IACUC, animal research investigators, and animal facility staff on current regulatory requirements involving the requirements for disaster planning.



Appendix I

Animal Facility floor plans, key personnel, and contact information

Appendix Ia – Andover Animal Facility

Emergency	Contact (s)	Title	Phone number
Equipment alarms, severe weather, pandemic	Mindie Howard	Manager, Animal Care Program	O 978.934.2521

Appendix Ib – Olsen 605

Emergency	Contact (s)	Title	Phone number
Equipment alarms, severe weather, pandemic	Dr. Natalie Steinel	Principal Investigator	O 978.934.2833 C 512.413.4119

Appendix Ic – Olsen 005

Emergency	Contact (s)	Title	Phone number
Equipment alarms, severe weather, pandemic	Dr. Natalie Steinel	Principal Investigator	O 978.934.2833 C 512.413.4119

Appendix Id – Olsen 603

Emergency	Contact (s)	Title	Phone number
Equipment alarms, severe weather, pandemic	Dr. Nicolai Konow	Principal Investigator	C 443.416.8632

Appendix Ie – Olsen 512

Emergency	Contact (s)	Title	Phone number
Equipment alarms, severe weather, pandemic	Dr. Frederic Chain	Assistant Professor	C 978.932.6054 O 978.934.2873

Appendix If – Perry 310D

Emergency	Contact (s)	Title	Phone number
Equipment alarms, severe weather, pandemic	Dr. Bryan Black	Principal Investigator	O 978.934.3814 C 980.241.6394

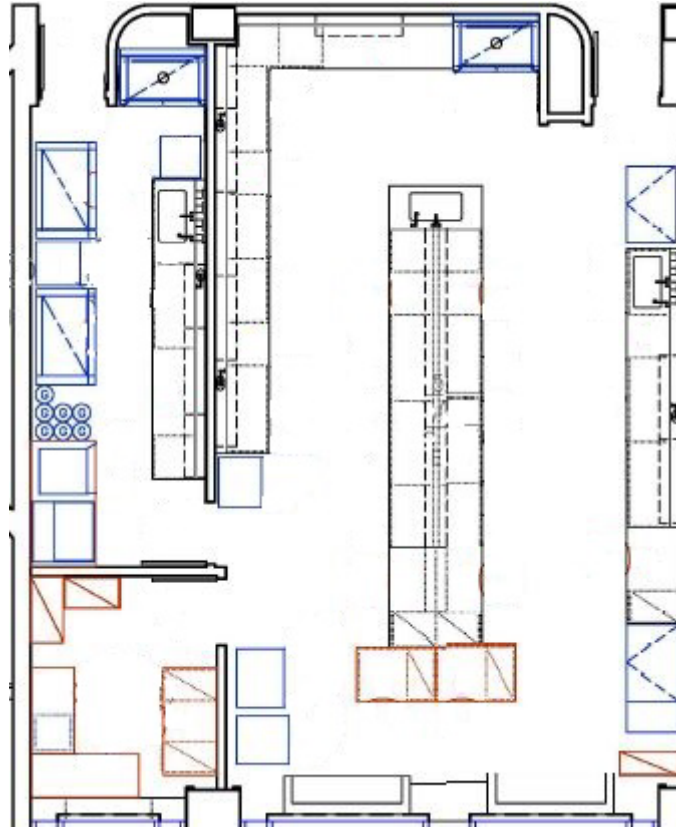


Appendix Ia Andover Animal Facility Floor Plan A



Key Personnel

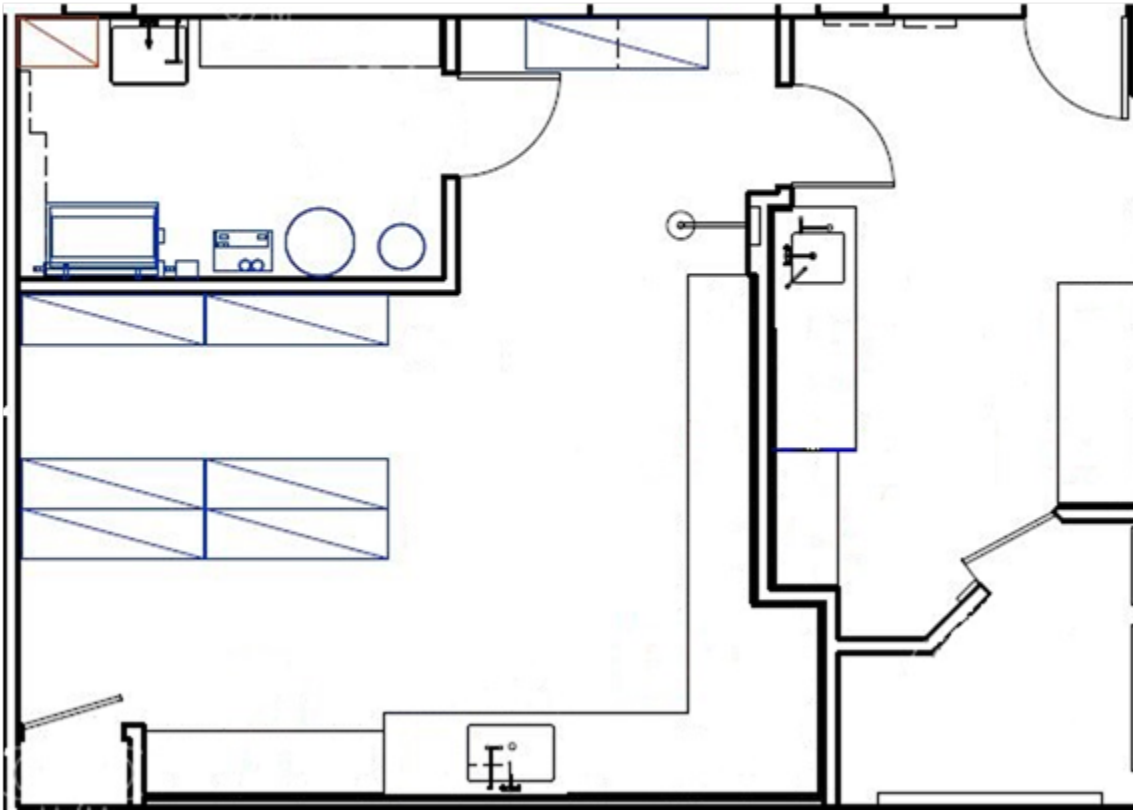
Animal Facility Manager	Mindie Howard	978.934.2521
Animal Care Technician II	Erica Giuffrida	978.934.3254
Animal Care Technician I	Erika Rondon	978.934.3252
Attending Veterinarian	Dr. Scott Perkins	617.947.5770



Key Personnel

Principal Investigator	Natalie Steinel	512.413.4119
Postdoctoral Researcher	Abdelmounaim Nouri	617.682.2583
Graduate Student	Alexandra Collias	978.758.1111
Graduate Student	Saraswathy Vaidyanathan	508.826.3150
Graduate Student	Karisma Sarangi	401.499.7271
Attending Veterinarian	Dr. Scott Perkins	617.947.5770

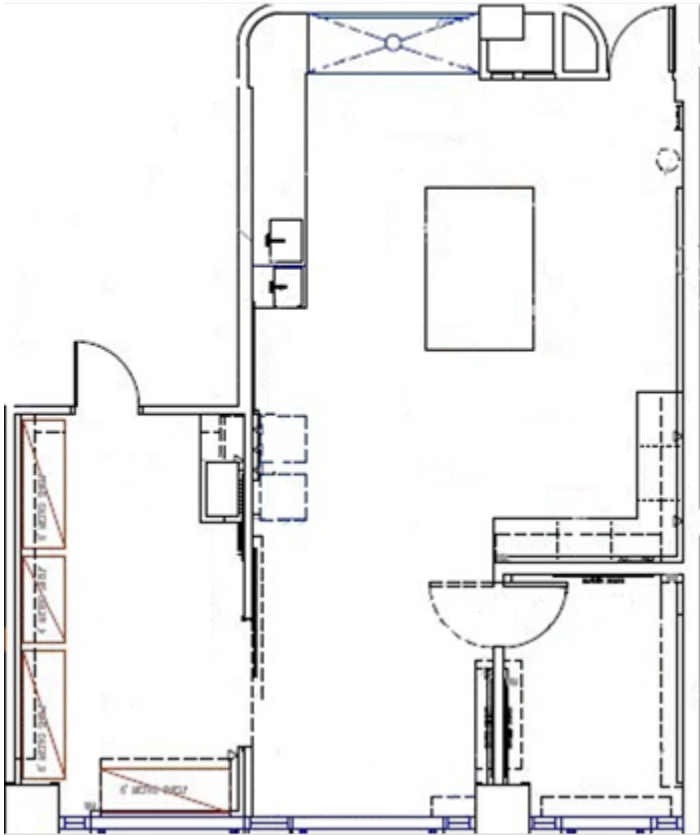
Olsen 005



Key Personnel

Principal Investigator	Natalie Steinel	512.413.4119
Postdoctoral Researcher	Abdelmounaim Nouri	617.682.2583
Graduate Student	Alexandra Collias	978.758.1111
Graduate Student	Saraswathy Vaidyanathan	508.826.3150
Graduate Student	Karisma Sarangi	401.499.7271
Fish care assistant	Maeve Moynihan	978.387.4534
Fish care assistant	Mary Tibbetts	978.888.3526
Attending Veterinarian	Dr. Scott Perkins	617.947.5770

Olsen 603



Key Personnel

Principal Investigator	Nicolai Konow	443.416.8632
PhD student/animal care technician	Yonas Tolosa Roba	978.654.2307
Graduate student/animal care technician	Brian Richard	603-545-9691
Undergraduate animal care technician	Caitlin Pannesiti	978.987.5470
Undergraduate work study technician	Evan Tsiropoulos	978-914-0166
Attending Veterinarian	Dr. Scott Perkins	617.947.5770



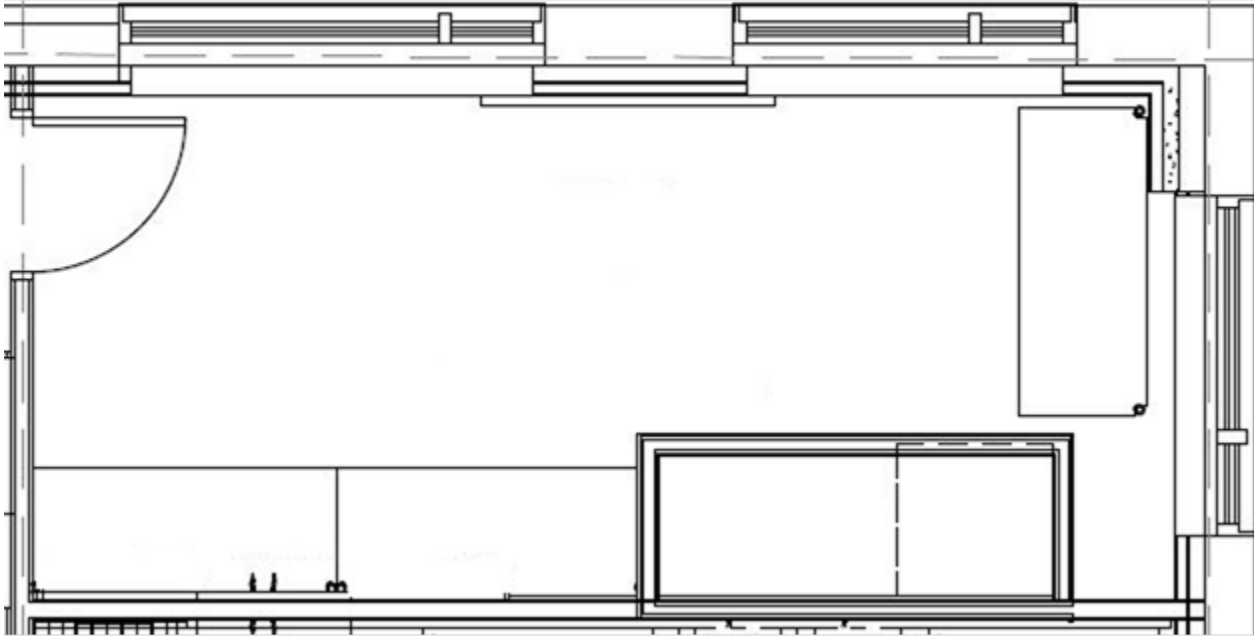
Appendix Ie Olsen 512

Field Work

Key Personnel

Principal Investigator	Frédéric JJ Chain	978.932.6054
Attending Veterinarian	Dr. Scott Perkins	617.947.5770

Perry 310D



Key Personnel

Principal Investigator	Bryan Black	978.934.3814 980.241.6394
Attending Veterinarian	Dr. Scott Perkins	617.947.5770



Appendix II Andover Facility Training

Name of Personnel:		Date:	
Principal Investigator:		Protocol Number:	

Completed	Training	Comments
<input type="checkbox"/>	Accessible parking @ 4 Corporate Drive (2 parking lots)	
<input type="checkbox"/>	*Accessing building – Main Entrance	
<input type="checkbox"/>	*Accessing Freezer Room 4115, Material Entry Room 4117, and Life Science Room 4121	
<input type="checkbox"/>	Animal Facility Attire Requirements: long pants, closed toed shoes No Shorts, Skirts, Flipflops, Sandals, Slides, etc. are permitted Note: scrubs or other lab attire can be stored in UML cupboard	
<input type="checkbox"/>	Animal Facility Gowning Minimum Requirements: booties or designated lab shoes, gloves, lab coat. <u>Mask</u> when in an <u>animal room</u> or <u>dirty room</u> . Safety glasses/goggles/face shield when working with splash hazard.	
<input type="checkbox"/>	*Access to Animal Facility rooms (LS4121 life science/gowning and air lock, 4117 material entry, biowaste storage LS119, clean cage LS122, LS114, LS115, LS116, LS117, LS118, A, B, C, D, dirty cage LS122A and 4115 freezer). Animal Facility Usage Hours 6:30 am – 6:30 pm – Users NOT permitted in the facility outside of these hours.	
<input type="checkbox"/>	Identify: Emergency showers (clean cage room, dirty cage room, hallway LSC1) and Eye wash stations (clean cage room, dirty cage room, hallway LSC1, LS114, LS115, LS117, LS118), and Spill kit (clean cage room).	
<input type="checkbox"/>	Identify location of LN ₂ , Dry Ice, Ice, and CO ₂ Note: Use of chemicals requires training	
<input type="checkbox"/>	Evacuation Route (layout posted throughout animal facility) and Meeting Place is at the “ Assembly Area 5 ” sign in the secondary parking lot of 4 Corporate Drive (evacuation route & meeting place provided to trainee via email)	
<input type="checkbox"/>	Animal Care and Welfare Concerns reporting – notices posted throughout animal facility	
<input type="checkbox"/>	Order Lab Coats (3) w/EHS (trainer)	Size =

*Badge Access Required

Trainee: _____ Trainee: _____ Date: _____
 Print Name Signature

Trainer: _____ Trainer: _____ Date: _____
 Print Name Signature



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STEINEL LAB – *U. MASS. LOWELL*

EMERGENCY RESPONSE-PLAN OF OPERATION

A. Purpose

The Steinel Laboratory is responsible for the daily care and maintenance of animals housed in Olsen 005 at the University of Massachusetts Lowell. This obligation extends to emergency situations, potentially compromising the wellbeing of subjects housed in the Steinel lab facility. The plan outlined below has actions necessary to prevent animal pain, distress, or death due to loss of systems such as those that control ventilation, water cooling, water quality, water purification and filtering, or provision of potable food and/or water.

This plan is designed to:

- Provide a framework in responding to weather or staffing emergencies
- Minimize injury, damage, and loss of people and animals
- Protect research that is in progress, if possible
- Resume operations as soon as possible after the emergency

Potential Threats/Emergency Events

The vulnerability of the facility is evaluated to determine potential threats and identify those that pose the highest risk. The Steinel laboratory animal facility has limited (card-swipe) access and is secured at all times. Nevertheless, the following events may potentially affect facility operations:

- Critical room temperatures failure (HVAC failure)
- Weather-related events (e.g., hurricane, blizzards)
- Fire
- Extended power outage
- Flood/leak

The highest risks for the Steinel Laboratory Animal facility are from an extended loss of power, aquarium leaks, and inability of support staff to reach subjects in the facility. These events are the most likely threats that would cause the highest need for action.

Emergency Response Training for Personnel



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All lab members are briefed on the types of emergencies and the actions that may be required for each. The Emergency Response Plan is posted in the lab facility with emergency contact information.

B. Emergency Contact Information

In an emergency the PI should be contacted immediately (**512-413-4119**). Facilities should be notified of mechanical, plumbing, or electrical issues.

In the event that the PI is unreachable, please contact Mindie Howard, Animal Facility Manager: O: **978.934.2521**, C: **978.289.0411**

C. Facility Information

The Steinel lab Animal Facility is located at 198 Riverside Street, Olsen Hall room 005

The facility consists of:

- 1 animal holding rooms
- 1 prep room
- 1 mechanical room

General Animal Care and Support

All animals are checked daily, including holidays and weekends, by either the PI or a student employee for the following:

- Environmental conditions
- Aquarium temperature, pH, and conductivity
- Water purification and filtration
- Aquatic system maintenance
- Sick, injured, or deceased animals

Environmental and Aquarium Conditions

Environmental and aquarium stability is dependent on continuous electrical power and a properly functioning HVAC system. Disruptions in any of these systems can have deleterious effects on the animals and the research being conducted. Systems that may be affected include water chiller, the control aquatic systems, air and water pumps, water parameter controls, RO purification, and animal room light cycles; extreme fluctuations in water temperature, aeration, pH, and conductivity can alter animal physiologic conditions and result in death.



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Chiller

A breakdown or loss of the water chiller system may result in increased temperature levels out of the physiologic range, resulting in fish stress and death. Chiller failure will result in water temperature higher than the set point. The system temperature is checked daily during fish care and the system will send automated alarms if the temperature is out of range. In the event of water chiller outage:

- Contact facilities and PI immediately
- Check breaker
- Turn HVAC system down as low as it will go, contact facilities to see if temp can be lowered further.
- If water temperature rises above 18 °C, place tanks on ice/ice packs to ensure animal well-being.
- Consider placing bags or plastic bins of ice (blue bins for this purpose are stored under the counter in 005) into sumps. If using bags, must be certain bags cannot leak (double bag). Fish shipping bags, found in 005, are ideal for this purpose. Monitor water temperature closely and be sure bags are not being sucked into water intake pipes.
- Rapid temperature changes can be fatal for fish. When restoring to proper temp, be sure to step it down slowly over several hours/days. Aim for no more than 2 °C per day.

RO System

A breakdown or loss of the water purification (reverse osmosis RO) system may result in loss of water to feed the system. RO system failure will result in low/no output of RO water and the storage tank not filling. The RO tank level is checked daily during fish care. In the event of RO system outage:

- Contact PI immediately
- Check breaker
- Immediately stop all automatic water changes by unplugging water change pumps (both on main system and rack 7)
- In the case of long-term repairs, partially purified water (passed through the filters, but not through the RO membranes) can be used to fill the RO holding tank and treated with commercial chlorine removers for 15 minutes to remove traces of chlorine prior to use. Partially purified water can be obtained from the port on the side of the RO system. Water should be tested for free and total chlorine levels using the kit in the lab.
- Contact facilities and/or vendor for repairs/replacement parts: Simply Clean (CT) 860-231-0687

Water pumps

A breakdown or loss of the water circulation pumps will prevent the circulation of oxygenated and cooled water. Water pump failure will result in no/reduced water flow. Water flow to each tank is checked during fish care. In the event of a water pump outage:

- Contact PI immediately
- If possible, replace pump with spare in mechanical room. Contact facilities is assistance if needed
- If water circulation is out for more than an hour, begin manual water changes with oxygenated, chilled water.

Water change pump



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10% of the systems water is released every day and replaced with clean RO water. A broken water pump would be detected during daily fish care. A breakdown or loss of the water change pumps will lead to the buildup of waste products from uneaten food and feces. In the event of a water change pump outage:

- Contact PI immediately
- Replace water change pump with back-up
- Water changes can safely be stopped for up to 48 hours, if outage is longer than 48 hours conduct manual water changes using a siphon

Drum filter and controller

The drum filter removes particulate debris from the system. A nonfunctional drum filter will result in a low water level alarm message being sent. A breakdown or loss of the drum filter or filter controller will lead to build up of waste products and will prevent the free flow of water through the system. In the event of a drum filter or controller outage:

- Power cycle (turn off and then turn on), check breaker
- Contact PI immediately
- Contact Aquatic Enterprises (Eric Stone: Eric@aquaticenterprises.com) to replace/repair unit
- In the interim, clean and change box filters more frequently (2-3 times per day) especially immediately after feeding
- Remove drum filter

Air pumps

The air pumps provide essential oxygenation to the fish. A broken air pump would be detected during daily fish care. A breakdown or loss of the air pumps will result in stress and death. In the event of an air pump outage:

- Replace with backup air pumps on shelf in Olsen 005
- Contact PI immediately
- Purchase replacement air pump from Amazon, hydroponics or pet store

Monitoring system

The monitoring system controls the pumps, UV sterilizer, pH dosing, water changes, and conductivity (salt). Control panel failure would be detected during daily fish care. A breakdown or loss of in this control panel could result in fish stress and death. In the event of a monitoring system outage:

- Contact PI immediately
- Plug water change pump, system pump, and UV sterilizer directly into wall (each on separate outlets)
- Stop water changes and manually adjust conductivity and pH using handheld meters.
- Contact vendor for replacement or repair of unit. Eric Stone:
- Swap the rack 7 control panel for the main computer. Rack 7 can be run without a control panel

Lights or light timer

The fish are kept on a consistent light cycle using a mechanical timer. A breakdown or loss of the lights or lighting control system can cause stress in the fish. In the event of a lighting outage:



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- Contact PI and facilities immediately
- Use lamps or clamp lights to provide light on the same schedule
- If timer error, manually turn lights on and off a designated hours which are indicated on the door to the fish holding room (Olsen 005)

UV sterilizer

The UV sterilizer is a beneficial but not essential component of the aquarium system. The UV bulb is checked daily during fish care. A breakdown or loss of the UV sterilizer, however, could lead to the overgrowth algae and potentially pathogenic bacteria and fungi. In the event of a UV sterilizer outage

- Contact PI immediately
- Replace bulb (handle only with gloves)
- If bulb is not the issue, contact Aquatic Enterprises to replace unit (Eric Stone: Eric@aquaticenterprises.com).

Power outages can result in failure of the temperature control, production of RO water to feed the system, air pumps, filtration of aquaria. Outages can also cause undesirable variations in light cycles and in loss or invalidation of research data. The entire facility is therefore on back-up power.

Emergency Animal Supplies

Supplies needed for emergencies include water and food. Emergency supplies should always be available, food is usually kept on hand in a waterproof container to adequately cover short-term emergencies.

Water

Our animals are aquatic so identifying alternate water resources is critical. If water supply is interrupted or compromised, emergency supplies will be needed. Until water supply can be restored, water changes should be stopped (water change pumps unplugged). If there is a long term water outage, and we cannot get water from other sources, water changes can be safely stopped for up to 48 hours.

If advance notice of emergency is given (e.g. blizzard, pandemic flu), the following will occur:

- a. All non-essential equipment will be turned off and unplugged.
- b. Animals will be fed and uneaten food will be removed to ensure water quality (all ectotherm animals are capable of surviving for weeks without food supply so our organisms are not as troubled by short to medium term deprivation of food as mammals are).

Food

- Enough food for provisioning over 2-3 months are routinely keep on hand in the laboratory. If we are running short, we will order additional supplies overnight or acquire supplies from local pet stores.

D. Potential Threats/Emergency Events and Responses

- The potential emergencies are outlined below and include responses to critical room temperatures failure (HVAC failure), weather-related events (e.g., hurricane, blizzards), fire, extended power outage, and flood/leak.



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1. Critical Animal Room Temperatures *(Alarms and HVAC Failure)*

Observation:

The room temperature is above/below normal, alarm system is not working properly or is in alarm status:

- During **normal working hours**, the Facility Manager or employee notifies the Facilities Department and stays on site for frequent animal monitoring until the situation has been rectified
- The AV and Director of Institutional Compliance are notified immediately
- During **non-working hours**, the alarm system notifies the University Police and Facility Manager is notified, who then notifies the facilities department for evaluation and estimated repair time

Animal Care and Support (response will depend on the time of year of the event):

- Animal room doors are propped open
- Portable fans are set up in the animal room
- Portable AC units may be requested from the facilities department

Emergency Animal Supplies:

- A breakdown of the HVAC system for an extended period of time may result in increased temperature and humidity, which could affect the quality and palatability of the feed. Food will be refrigerated in a unit that is on e-power and monitored for quality change. If e-power fails, use fridges and freezers in Olsen 605

Communication:

- The PI will notify all student investigators whose animals are affected by the event and follows through with any further instructions

2. Floods or High Water Event (Natural Disaster or Facility Flood)

Observation:

Flooding caused by an aquarium system leak, a ruptured water storage container, or ingress of water from outside.

- During normal working hours, the PI or students will attempt to stop the flooding by isolating the relevant rack or pipe and squeegee the spillage towards the floor drains to limit damages.
- The PI or his delegate will then notify the Facilities Department immediately and requests assistance and an estimated repair time. The PI or his delegate will stay on-site to increase frequency of animal monitoring (where needed) until the situation has been



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rectified.

- Steps will be taken to ensure the aquarium system does not lose water levels
- If the water circulation pump must be turned off, tank water temperature and aeration on the major concern. Water changes (of oxygenated, chilled water) should be conducted frequently while repairs are underway.
- The AV and Director of Institutional Compliance are notified immediately

Animal Care and Support:

- Animals are checked as soon as access to the building is granted. Depending on the extent of the flooding, animals may be relocated to other locations within the facility
- Animals that cannot be relocated will be moved to either the highest row within their racks or as far away from the water source as possible and monitored with increased frequency
- Animals suffering from exposure or related injury will be examined and treated, or euthanized as necessary
- Dead animals will be removed, bagged in plastic, and placed in the cold storage area. If the cold storage area is damaged, cold storage areas in non-contiguous areas will be utilized

Emergency Animal Supplies:

- Food and/or water supplies destroyed by flooding will be discarded, the feed distributor, Brine Shrimp Direct, is contacted for immediate replacements
- Quality control of the water supply will be carried out to verify that the water is potable, if it is not, a local water distributor will be contacted for provisions

Communication:

- The PI notifies all student investigators who had animals that were affected by the event and follows through with any further instructions

3. Power Outage

Observation:

- During a power outage the secure card access panel does not work, and the UML Police must be notified to gain entry to the building and facility
- The water pumps, air pumps, control systems, RO systems, and chillers are all on backup power. However, their proper functioning should be confirmed.
- The HVAC is not connected to the backup generator so environmental conditions will be affected, follow the **Critical**



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Animal Room Temperature Plan

- For a power outage that occurs during normal working hours, the PI or his delegate notifies the Facilities Department immediately and requests an estimated repair time, the PI or his delegate stays on site to increase frequency of animal monitoring until the situation has been rectified
- For outages outside of normal working hours, the emergency facility line should be called.
- The AV and Director of Institutional Compliance are notified immediately

Animal Care and Support: ((response will depend on the time of year of the event):

- If backup power fails, tank water temperature and aeration on the major concern. Water changes (of oxygenated, chilled water) should be conducted frequently until power is restored
- If outlets within the building are functional, extension cords should be run to power pumps and aeration.

Emergency Animal Supplies:

- An outage affecting the fridges and freezers for an extended period of time may result in increased temperature and humidity, which could affect the quality and palatability of the feed. Food will be monitored closely for spoilage.

Communication:

- The PI notifies all student investigators who had animals that were affected by the event and follows through with any further instructions

4. Building Evacuation/Fire/Bomb Threat/Bombing

Observation:

- Leave building immediately
- Do not re-enter the building until it is determined safe
- The PI will report the animal program status to the Attending Veterinarian and Director of Institutional Compliance

Animal Care and Support:

- Animals are checked as soon as the Lowell Fire Department and/or Lowell Police Department grant access to the building
- Animals suffering from injury are treated or euthanized as necessary
- Dead animals are removed, bagged in plastic, and placed in the cold storage area. If the cold storage area is damaged, cold storage areas in an unaffected area will be utilized



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Emergency Animal Supplies:

- Food and/or water supplies destroyed by fire, smoke or water damage are discarded, the local feed distributor will be contacted for immediate replacements

Communication:

- The PI notifies all student investigators who had animals that were affected by the event and follows through with any further instructions