I. Site-Specific Responsibility and Plan Review

Responsible Party (Director): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone: \_(\_\_\_\_)\_\_\_\_\_\_\_\_\_\_\_\_ Email: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Safety Contact/Coordinator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone: \_(\_\_\_\_)\_\_\_\_\_\_\_\_\_\_\_\_ Email: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Implementation date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Annual/periodic review dates:

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| Date | Reviewer | Date | Reviewer | Date | Reviewer |
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II. Scope and applicability:

Animal diseases which can cause disease in humans are called **Zoonotic Diseases**. Disease which is transmitted by exposure to infectious aerosol is called **Aerosol-Transmissible Disease**. California regulation (8 CCR §5199.1. Aerosol Transmissible Diseases - Zoonotic) requires that employers take measures to protect employee health if there is potential for exposure to aerosol-transmissible zoonotic diseases in the workplace. Every employer with work operations involving handling, culling, transporting, killing, eradicating, or disposing of animals infected with zoonotic aerosol-transmissible pathogens, or the cleaning and disinfection of areas used, or previously used, to contain such animals or their wastes, shall establish, implement, and maintain written zoonotic disease control procedures to control the risk of transmission of disease from the animals to employees. These procedures shall be available onsite at all times when employees are present, and shall be maintained as an employee exposure record, in accordance with CalOSHA requirements.

Employees may have occupational exposure to zoonotic disease agents while performing the following tasks and procedures:

* [List task and procedures which may present zoonotic disease exposure hazards—some examples provided below]
* Directly assisting in sheep birthing or clean-up of wastes following birthing
* Collecting and disposing of carcasses of animals which have died from contagious disease or unknown causes
* Handling live animals, or untreated wastes and carcasses
* Cleaning of enclosed work areas which may contain untreated animal waste

Additionally, the following injury or illness events may indicate zoonotic disease exposure and must be reported immediately for prompt medical assessment:

* Tick bites and bites from other potentially disease carrying insects which occur (or are suspected to have occurred) while performing work tasks or being in vicinity of animals in the workplace
* Animal bites or other skin wounds which occur while performing work tasks
* Wounds which appear unusual, become infected, or do not heal as expected
* Unusual or unexplained infections or rashes on eyes, skin, or mouth
* Flu-like symptoms

III. Procedures and Controls:

Background and rationale - Complete absence of disease-causing biological agents is rarely possible to verify in animal housing operations. Presence of disease agents may only be possible to confirm after exposure has occurred. Individual immune responses and sensitivities can vary. For these reasons, employees are encouraged to take precautionary measures for certain operations and tasks although there has not been a diagnosis of disease and disease agents are not known to be present at the time.

Employees will use the following safety controls to minimize or eliminate exposure to zoonotic pathogens:

1. Training

Employees are trained prior to assignment of work task with an annual review of safety information provided annually thereafter. This exposure control plan and any task-specific procedures are reviewed as part of the training content and workers are provided an opportunity to ask questions or raise any safety concerns without fear of reprisal.

1. Standard Operating Procedure (SOP)

A detailed work plan (or SOP) is developed for each task or procedure which presents opportunity for zoonotic disease exposure. The SOP includes an assessment of the risks to employees, including biological, chemical, physical, and safety hazards, and a description of site control measures including designating a restricted area consisting of contaminated zones and contaminant reduction zones. SOPs are reviewed and approved by the Animal Care and Use Committee (ACUC) and are included as appendices to this plan.

1. Recognition and minimization of infectious aerosols:

The primary method of exposure to biological disease agents is through exposure to infectious aerosols or surface contamination resulting from aerosol generation. Aerosols are produced when energy is added to a liquid or solid to make it airborne. Aerosols, once airborne, can be inhaled. Aerosols (unlike vapors and gases) can also settle onto surfaces once the particles of liquid or solid material are no longer airborne. This can lead to contamination of surfaces, people, and equipment which are exposed to settling aerosols. Aerosols may be very fine mists or dusts which are not visible to workers or easily detected in the workplace, so it is important to recognize activities which are likely to generate aerosols. Live birthing of animals, diarrheal diseases in animals, mixing of liquid samples, spills of liquid biological samples, and handling of biological waste or animal carcasses are common events which produce liquid aerosols. Cleaning of animal housing areas, windy conditions, and handling of biological waste or animal carcasses are common events which can produce solid (particulate) aerosols.

Recognizing when and how aerosols are produced and taking measures to avoid aerosols are key to protecting human and animal health. Human health is protected by avoiding inhalation, ingestion, skin exposure, and wound contamination with aerosols. Animal health is protected by sanitation practices and measures used to eliminate spread of animal disease agents to other susceptible animals.

The first line of protection is to take measures (wherever possible) to avoid producing aerosols, particularly inside of enclosed spaces. If production of aerosols is unavoidable, then measures must be taken to minimize worker exposure. Avoiding areas during production of aerosols or standing upwind of aerosol-generating activities will minimize chances of inhalation or direct skin exposure. Aerosols in enclosed work areas may be diluted, removed, or isolated by use of natural or mechanical ventilation systems. Surfaces and equipment in work areas where aerosol generating activities occur should be assumed to be contaminated with aerosols and must be regularly cleaned and sanitized in a manner which minimizes hazardous chemical and biological exposure to workers. If measures to reduce exposure are not adequate or if there is potential for presence of disease in the animal, use of personal protective equipment (PPE) is necessary to avoid exposure.

1. Work practice controls and personal protective equipment (PPE):
2. Animal Health Monitoring:   
   Animal health is monitored by the Shepherd, Superintendent, and by the Animal Care and Use Committee (ACUC). In the event of suspected disease outbreak, a licensed veterinarian will be consulted. Animal health records are maintained to document any instances of known or suspected animal diseases. An animal is considered infected with a contagious disease once it has been diagnosed by a licensed veterinarian. Suspected cases of animal disease may be treated with precautionary measures until diagnosis can be made if the available evidence indicates there may be disease hazard to humans (e.g. aborted calves, dead or sick wildlife).
3. Sharps safety and minimization of flesh wounds:   
   A key route of entry for some zoonotic diseases is through open wounds in skin, therefore measures must be taken to minimize chances of punctures or cuts to skin. Hands-on training and specific guidance is required for procedures and activities which involve use of needles and sharp objects in animal areas. Open wounds must be protected from exposure to contaminated materials or aerosols. Sharps (needles, scalpels, and glass pipets) must be disposed in sharps containers or other approved hard-walled container after use. Needles and scalpels are directly and immediately disposed into a proper waste container after use. Sharps should not be collected in an intermediate container and then transferred to waste container later. Needles should not be recapped before disposal. If re-capping of needles is required for the work, the specific procedure must be reviewed and approved by the ACUC.
4. Designation and posting of work locations:

Enclosed areas where animals are housed are designated as “animal housing areas” and posted with requirements for entry and exit.

Animal areas that are known or suspected to contain animal diseases which may threaten human or other animal health are designated as “restricted areas” and posted with requirements for entry and exit.

Enclosed areas used for storage, handling, or processing of untreated animal wastes and carcasses are designated as a “waste accumulation site”. Waste accumulation areas may also be designated as restricted areas based on evidence or likelihood of zoonotic disease agents.

Restricted areas are posted “Restricted Area: Authorized Personnel Only”. Entry to restricted areas is only by permission of the Shepherd and only for necessary and specific tasks identified by the worker and Shepherd. Signage identifying the specific disease agents, possible hosts, and route of exposure will be posted at entry if a disease agent is known to be present. Whenever practicable, access to the area by the general public or workers should be prevented by obvious physical barriers or visual cues.

A decontamination buffer zone will be identified to allow for workers to put on and remove PPE and decontaminate equipment when exiting the restricted areas. Visitors are not allowed in restricted areas unless their presence is required and authorized by the site superintendent and the director. Other animals which are not necessary to the project (dogs, cats, and wildlife) will be prevented from entering or passing through restricted areas if they present a risk for disease spread or transmission.

Outdoor locations which are not enclosed by a structure or a fence (e.g. open range) are not posted unless ordered by state or federal health authorities in a disease outbreak response.

1. Access to drinking water and sanitation facilities:

No eating or drinking is allowed in animal areas. Workers are allowed to leave the animal area to drink water or use restrooms as needed.

1. Heat illness risk:

During times of high heat (>80F) workers are allowed and encouraged to take breaks as needed for purpose of recovery if symptoms or signs of heat illness are reported. Work in outdoor locations is conducted according to the Heat Illness plans defined in the Injury and Illness Prevention Plan (IIPP). Workers conducting tasks indoors are also educated in signs and symptoms of heat illness and steps to take in the event of suspected heat illness.

1. Personal protective equipment (PPE):

Requirements and recommendations for use of personal protective equipment are determined according to the worker’s potential for exposure to biological and chemical hazards. Additional information such as medical history/conditions and environmental factors (heat illness, dusty conditions) are also considered in determining which PPE is best suited for a given task.

When an area is designated as restricted, specific PPE is required for all workers entering the area. PPE may also be required or recommended in general animal areas for the purpose of minimizing chance of animal disease transmission to animals or minimizing human exposure to allergens. PPE must be left in the animal area, disposed properly, or decontaminated before removing from the area.

Respiratory protection:

PPE used for respiratory protection includes tight-fitting respirators, N95 filtering facemasks, and Powered Air-Purifying Respirator (PAPR).

Respiratory protection is required for employees who have exposure to known or suspected zoonotic disease agents which are hazardous via inhalation. In cases where health status of the animal is unknown and there is no sign of disease, respiratory protection may be used as a precautionary measure to prevent sensitization to allergens.

Employees who wear respiratory protection for mandatory or precautionary reasons must do the following before wearing a respirator and annually thereafter:

* Obtain written clearance for use of a respirator (issued by a qualified Health Care Provider)
* Complete a fit test (provided by EHS staff or other similarly qualified person) to assure that respirator is fitted properly to the employee
* Complete training in use and limitation of respirators
* Complete review/training on applicable SOPs for work tasks

Employees who are unable to use tight-fitting respirators or N95 facemasks can use a Power Air-Purifying Respirator (PAPR). Employees wearing PAPRs do not require an annual fit test, but must complete all other requirements for respirator users listed above.

Eye protection:

Eye protection such as goggles and face shields are used to protect eyes and mucous membranes from exposure to biological and chemical hazards. Goggles provide the best protection and should be used whenever there is an identified chemical or biological hazard which requires eye protection. Face shields and safety glasses may be used for splatter and droplet protection, but may not protect against all airborne biological and chemical hazards.

Facemasks:

Surgical face masks may be used to prevent ingestion of biological hazards via splashing, hand-to-face, or hand-to-mouth contact. Surgical face masks do not provide respiratory protection.

Protective outer clothing (labcoat or coveralls):

Protective outer clothing is worn to minimize or prevent contamination of personal clothing with airborne liquid aerosols or dusts in animal areas. The degree of protection required is based on the worker task and potential for contamination with biological or chemical hazards.

Visitors to an animal area who are not present for aerosol-generating activities and who do not have direct contact with animals may wear a lab coat or no special outerwear if they have not visited other animal areas outside of the facility on the same day. Workers who directly handle animals or participate in cleaning activities which generate airborne dusts and liquids, wear coveralls. Coveralls must prevent contamination of inner clothing. Impermeable aprons may be used for isolated tasks which involve liquid splash. Larger splash hazards may require impermeable coveralls. Hair covers may be required to prevent contamination of hair with airborne materials or disease agents.

Reusable lab coats or coveralls must remain in the animal area while in use and be laundered before being re-used outside of animal area. Disposable lab coats or coveralls which have come in contact with animals or airborne contamination are disposed into a closed, lidded container prior to exiting the animal area.

Personal showers and change of clothes before exiting animal areas may be used to substitute for use of coveralls and/or hair covering.

Gloves:

Gloves are used to provide protection from direct skin exposure to biohazards (disease-causing agents) and disinfectant chemicals. Proper disinfection or disposal of used gloves is important for preventing transfer or spread of animal diseases and dander outside of designated animal areas. Reusable gloves must be impermeable to liquids and be resistant to the disinfectant chemicals commonly in use. Reusable gloves must be disinfected before removal from animal areas. Disposable gloves can be used for protection from disease agents or to prevent disease transfer from animal to animal. Disposable gloves which have come in contact with animals should be disposed into a closed, lidded container prior to exiting the animal area.

Shoe and foot protection:

Shoe protection is worn to prevent transfer or spread of animal diseases and dander outside of designated animal areas. The degree of protection required is based on the worker task and potential for contamination with biological or chemical hazards. Workers involved in animal handling or husbandry tasks should have dedicated shoes or boots for use in animal areas. The outside of the shoes must be disinfected before leaving the animal area. In cases where dedicated footwear (or disinfection) is not feasible, shoe covers may be employed. Durable liquid-impermeable high-top disposable shoe covers are to be used for intensive work with animals or cleaning of animal areas. Lighter duty shoe covers may be used for visitors who enter animal areas where there are no known disease agents present when. Disposable shoe covers are disposed into a closed, lidded container prior to exiting the animal area.

1. Procedures for the safe handling of hazardous substances, including hazardous substances used for disinfection and decontamination.
2. Biological sample handling.

Liquid or tissue samples which are collected from animals for later use, must be contained within two-layers of leakproof packaging before they are transported from the collection site. Inner packaging can be a tightly-sealed plastic bag or sample tube. Outer (secondary) packaging should be resistant to liquids, puncture, and breakage (such as a hard-walled plastic cooler). Use of glass should be avoided and glass breakage must be anticipated and planned for if glass sample containers are used. Secondary containers with dry ice should never be sealed airtight.

1. Use of disinfectants.

PPE will be selected and worn to protect against chemical hazards of disinfectants and sanitizers. PPE used by workers will be based on hazard information in the Safety Data Sheet and risk assessment for the operation, but at a minimum will include gloves and eye protection.

The following disinfectants are used in animal areas for decontamination of equipment. (list disinfectants and attach safety data sheets as appendices to plan):

1. Decontamination procedures.

All workers and visitors must wash their hands (or use hand sanitizer) before leaving animal areas.

Protective equipment and clothing which has come in direct contact with animals or has been used for protection against airborne biohazards, may contain disease agents and requires special handling. Unless other practices have been described in the SOP and approved by ACUC, disposable protective equipment must be disposed into a designated waste container prior to exiting an animal area. Reusable equipment must be decontaminated by spray application or wipe-down with disinfectant solution when transferred from one animal areas to another.

1. Disposal of animal waste and contaminated personal protective equipment.

Contaminated PPE from uninfected animal areas (where no disease diagnosis exists) should be disposed in designated waste containers and treated along with other waste (sent to landfill).

PPE which is contaminated with animal disease agents may require decontamination before disposal. [describe methods where applicable]

Animal carcasses and waste from animals which are not diagnosed with a disease should be disposed of in a manner which prevents the creation of excessive vectors or other adverse public health/well-being conditions. Carcasses and waste from animals which were not known to be infected with contagious diseases are disposed via [describe method].

Carcasses of animals with any contagious disease shall be disposed of by means prescribed by the California Department of Food and Agriculture, Division of Animal Industry, Section 17823.5:

* Animal carcasses from confined animal operations shall be collected, stored, and removed from the property to an approved processing facility or disposal site prior to the creation of adverse public health/well-being conditions, or processed or disposed of on the property in a manner approved by the Enforcement Agency.
* Animal carcasses from animals on pasture or rangeland shall be managed so as to prevent the creation of excessive vectors or other adverse public health/well-being conditions.

1. Procedures for the application of toxic or asphyxiant gases, if such gases are to be used in the operation. [describe procedures if applicable]

IV. Occupational Health Program and Medical Services:

Occupational medical surveillance of employees is provided by UC Davis Occupational Health Services. Medical services may also be obtained from local providers based on recommendations of UCD Occupational Health Services. Employees who are expected to have animal exposures in the course of their work must complete a medical questionnaire or medical evaluation procedure prior to being assigned to duties involving exposure to animals or animal handling. This initial evaluation is used to determine if vaccines or other services are necessary for protection from disease or for exposure monitoring. Biological exposure monitoring and prophylactic vaccinations may be recommended by the doctor for some employees based on a specific risk assessment. Following initial review, occupational medical review and assessment of employees who work with animals is required annually to monitor for development of animal-related allergies and possible zoonotic disease exposures.

V. Recordkeeping:

A copy of this exposure control plan and a history of review and revision is maintained as specified by CalOSHA.

Records of training are maintained for three years.

Records of verified employee exposures are maintained for thirty years.

Records of confidential medical information are not maintained by Hopland REC, but are available from UCD Occupational Health Services.

VI. Appendices:

(List and attach documents which are appendices to this plan)

1. Training records
2. SOPs for specific work tasks (produce SOPs for each activity listed on Page 2, have the ACUC review and approve these SOPs before work starts. Post-approval review should also occur on a regular basis afterwards)
3. Zoonoses information by species (download and include printed guidance as appendices):

<http://safetyservices.ucdavis.edu/ps/occh/acuohp/pem/zis/sheep.doc> (sheep)

<http://safetyservices.ucdavis.edu/ps/occh/acuohp/pem/zis/wildRodentsRabbits> (wild rodents)

<http://safetyservices.ucdavis.edu/ps/occh/acuohp/pem/zis/horses.doc> (horses)

<http://safetyservices.ucdavis.edu/ps/occh/acuohp/pem/zis/dogs.doc> (dogs)

<http://safetyservices.ucdavis.edu/ps/occh/acuohp/pem/zis/birdsOwlsRaptors.doc> (birds)

<http://www.iacuc.wsu.edu/zoonoses.aspx?ID=1102> (bats)

1. Other safety resources (heat illness prevention information, Safety Data Sheets for disinfectants, sanitizers and other hazardous chemicals in use for animal work.)

Heat Illness information for indoor environments: <https://www.dir.ca.gov/dosh/etools/08-006/P08-00602.pdf>

Heat Illness information for outdoor work:

<http://www.dir.ca.gov/dosh/hip.pdf>