

INFORMATION MANUAL FOR ENHANCED BIOSECURITY FOR FMD PREVENTION: CATTLE ON PASTURE

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Comments

Please send comments or suggested edits for improvement to: sbsinfo@iastate.edu

Additional Resources

The Secure Beef Supply website has additional resources available at: www.securebeef.org

Information Manual for Enhanced Biosecurity for FMD Prevention: Cattle on Pasture



Target Audience

This Information Manual and corresponding Self-Assessment Checklist apply to:

- Cattle operations of all sizes and management types that raise cattle on **private** pasture or rangeland, including those that share grazing land with animals from multiple sources (cornstalks, wheat stubble, etc.), with or without supplemental grain. This includes, but is not limited to, stockers, backgrounders, seedstock operations, cow/calf operations, and dairy cattle on pasture.
- Operations with other susceptible animals (e.g., cattle in confinement, pigs, sheep, goats) on the premises.
- All individuals delivering to, servicing, visiting, or working on the cattle operation (including family members and/or non-family employees).
- Cattle that have **never been infected with or vaccinated for** foot and mouth disease (FMD).

Cattle grazed on public lands have some unique FMD exposure risk challenges. Public land grazers need to be aware of the exposure risks as described in the [Management Practices and FMD Exposure Risks for Sheep and Cattle Grazing Federal Public Lands](#) document found on the [SBS Grazing Public Lands web page](#). Also on that web page is the “*Just-in-Time Biosecurity and Exposure Questionnaire for FMD: Livestock Grazing Public Lands*”. State or Federal Animal Health Officials may request completion of that document when ranchers apply for a movement permit from a Control Area involving public lands. Producers are encouraged to develop an enhanced biosecurity plan that meets the items in the corresponding Self-Assessment Checklist for their base property if livestock reside there at any time.

Introduction

In the event of a foot and mouth disease (FMD) outbreak in the United States (U.S.), maintaining business continuity for the beef industry is critical to the agricultural economy, food security, as well as animal health and well-being. The goal of the Secure Beef Supply (SBS) Plan is to provide a workable business continuity plan for cattle producers that have cattle with no evidence of FMD infection and associated industries that is credible to Responsible Regulatory Officials (local, state, tribal, and federal officials, as appropriate). In an actual FMD outbreak, decisions will be made by the Responsible Regulatory Officials based on the unique characteristics of each outbreak.

During an FMD outbreak, it is the producer’s responsibility to keep their animals from becoming infected, focusing on what they can control on their operation. Biosecurity approaches are both structural and operational. Structural biosecurity is built into the physical construction and maintenance of a facility. Operational biosecurity involves management practices designed to prevent the introduction and spread of disease agents onto or off of the premises. FMD will test the effectiveness of operational biosecurity because the FMD virus is highly contagious. Successful implementation of the biosecurity practices depends on the awareness level and behavior of individuals on the operation. **Implementing effective biosecurity measures to protect cattle raised on pasture from FMD can be expensive and inconvenient. However, a failure of biosecurity resulting in FMD infection of the herd can be devastating.**

FMD is highly contagious and has a major impact on animal health and international trade; however, it does not pose a food safety or public health concern. Existing biosecurity plans may offer protection

against endemic diseases but heightened precautions are needed for FMD. The enhanced biosecurity recommendations outlined in this document are based on the known exposure routes for FMD. Operations with susceptible species raised outdoors (on pasture, dry lots) may have more difficulty preventing FMD exposure depending on their proximity to infected premises and the presence of wildlife in the area. More information on strategies for a managed response to an FMD outbreak, including use of Control Areas, is available in the Secure Beef Supply Plan for Continuity of Business (www.securebeef.org).

This document emphasizes three concepts that all operations raising cattle on pasture should be ready to implement prior to an FMD outbreak in the U.S.:

1. A Biosecurity Manager,
2. A written operation-specific enhanced biosecurity plan, and
3. A Line of Separation.

This Manual is organized around the sections in the Self-Assessment Checklist for Enhanced Biosecurity: Cattle on Pasture (statements in outlined boxes). This Manual can be used to develop an operation-specific, written, enhanced biosecurity plan prior to an FMD outbreak. All operations should designate a Biosecurity Manager; this is item number 1 in the checklist. The Biosecurity Manager develops the biosecurity plan PRIOR TO an outbreak; the plan should address items 2-11 on this checklist. The biosecurity plan should describe the scope of the operation, contain forms for documentation of training and signatures, explanations of procedures and signage used on the operation, and protocols written and communicated effectively in languages that are fully understood by the individuals responsible for implementation.

Implementing the biosecurity plan, including training of individuals, before an FMD outbreak occurs provides the best chance to prevent animals on the operation from being exposed. Once the biosecurity plan is written, operation owners/managers may use the checklist in one of the following ways:

- **In the absence of FMD in the United States**, operation owners/managers should decide which items (#2-11) they will implement. The biosecurity plan should describe the strategy for how each item could be implemented (supplies needed, changes in management practice, etc.). These items may supplement or replace measures included in the operation's everyday biosecurity plan.
- **If FMD is diagnosed anywhere in the U.S.**, operation owners/managers should implement ALL of the items in the checklist to minimize the risk of exposing their animals.
- **If the operation is located in an FMD Control Area**, Responsible Regulatory Officials may require that all of the items on the checklist, and possibly others, be implemented before animal movement is permitted.

Scope of Biosecurity Plan

Each location (premises) should have its own biosecurity plan. Begin by defining your premises, clearly describing the animals (all species) and animal housing (buildings, pastures, and dry lots) associated with the operation. Additionally, other businesses operated from the same premises will need to be accounted for in the biosecurity plan (e.g., distribution or sales of feed, mineral, fertilizer, compost, seed, or equipment; livestock sales; hosting farm tours; etc.). Biosecurity plans for premises owned/managed similarly may have significant overlap.

A Premises Identification Number (PIN) may be required to request movement permits during an outbreak. A PIN includes a valid 911 address and a set of matching coordinates (latitude and longitude) reflecting the actual location of the animals on the premises. Request a PIN from the office of your State Animal Health Official. Generally, it is best to consider each operation that raises animals at non-adjacent locations or multiple locations that must be accessed via a public road as a separate premises, have a separate Premises Identification Number, and therefore, a separate biosecurity plan. When a premises becomes infected, all locations with the same PIN number will be considered to be infected.

1. Biosecurity Manager and Written Plan

A Biosecurity Manager is identified for the operation. This individual is responsible for developing the biosecurity plan with the assistance of a veterinarian (if they are not a veterinarian) and ensuring biosecurity training of, or communicating biosecurity measures with, all individuals who enter the operation. The Biosecurity Manager has the written authority to ensure compliance with biosecurity protocols and take corrective action as needed.

The designated Biosecurity Manager for the operation should be able to develop and implement biosecurity procedures effective in protecting the animals from FMD virus infection. The Biosecurity Manager should be familiar with the current structural and operational biosecurity of all locations, including pastures, affiliated with that premises where animals are housed as well as the health status of the animals. This individual can be an owner, manager, veterinarian, or employee. If the Biosecurity Manager is not a veterinarian, the individual should consult with an experienced veterinarian who is familiar with the operation layout, operating procedures, and health status of the animals when developing the biosecurity plan.

If the operation has animals at more than one location (premises) with movement of animals, people, equipment, or vehicles between them, each location should designate a manager who is responsible for ensuring that the biosecurity practices for that location are followed on a daily basis. It is important that the Biosecurity Manager, and their designees, have the authority to take corrective action if protocols are violated or need to be revised. The Biosecurity Manager should identify an alternate contact person for the premises in the event that the primary Biosecurity Manager is gone or unavailable. The Biosecurity Manager and their designee should have their contact information posted in an area where it can easily be found.

The roles of the Biosecurity Manager include:

- Developing and implementing an effective, operation-specific biosecurity plan,
- Overseeing and documenting that all essential personnel have been trained in biosecurity protocols, and
- Taking corrective action, as needed, when biosecurity protocols are violated.

An operation-specific, written, enhanced biosecurity plan has been developed by the Biosecurity Manager. The plan is reviewed at least annually and whenever the operation goes through a change that affects biosecurity (expands, adds a new aspect of the business, etc.). The biosecurity plan clearly defines the scope of the operation, and includes biosecurity for other susceptible species kept on the premises. The biosecurity plan includes a map of the operation indicating the Line of Separation (LOS), LOS Access Point(s), cleaning and disinfection (C&D) station(s), designated parking, and carcass disposal/pickup location. The map indicates vehicle movements (animal transport vehicles, deliveries, etc.) and carcass removal pathways. The Biosecurity Manager ensures that all individuals entering the operation frequently (weekly or more often) have access to a copy of the biosecurity plan. The Biosecurity Manager is capable of implementing the written plan if FMD is diagnosed in the U.S.

The biosecurity plan must address how the operation will implement the biosecurity protocols described in this document. The biosecurity plan must also include other susceptible livestock (cattle, pigs, sheep and goats) on the premises. For biosecurity guidance for feedlot cattle, dairy cattle, pigs and sheep, see www.securebeef.org, www.securemilksupply.org, www.securepork.org, and www.securesheepwool.org.

The operation-specific biosecurity plan must include a premises map (satellite images are preferable) labeled with the following:

- Line of Separation (LOS)
- LOS Access Point(s) which serve as the designated entrance(s),
- Loading site,
- Cleaning and disinfection (C&D) station(s),
- Designated parking area outside the LOS, away from animal areas,
- Carcass disposal/pickup location and carcass removal pathways, and
- Vehicle movement pathways (animal transport vehicles, deliveries, etc.).

Additionally, if non-essential items will be delivered to the operation, the premises map should indicate the designated area for delivery of these items. If non-essential items are to be delivered to an off-site location (e.g., post office, residence), this should be clearly indicated in the biosecurity plan and signs posted at the LOS Access Point(s).

Read the instructions for [creating a premises map for a biosecurity plan](#) using Google Maps.

The Biosecurity Manager must document that he/she reviews the plan at least annually, whenever the operation goes through a change (expands, adds a new aspect of the business, etc.), or whenever the “Self-Assessment Checklist for Enhanced Biosecurity: Cattle on Pasture” is updated/changed (visit www.securebeef.org). The Biosecurity Manager must continuously adapt the plan to address changing risks or recommendations. Due to the inherent variation between operations, biosecurity plans must be created specifically for every premises.

The biosecurity plan should be located where it can be accessed by individuals frequently entering the operation, Responsible Regulatory Officials, or the attending veterinarian upon request.

If all checklist items are not “in place” after completion of the written plan, the Biosecurity Manager must be capable of implementing each item if FMD is diagnosed in the U.S.

2. Training

The Biosecurity Manager and essential personnel are trained at least annually about the biosecurity measures necessary to keep FMD out of the herd; training is documented. The Biosecurity Manager informs individuals entering the operation of biosecurity measures they are to follow in a language they understand. Individuals are aware of the biosecurity concepts and procedures that apply to their specific areas of responsibility. The biosecurity plan describes training required before entering this operation.

Encouraging Compliance through Training

Achieving good compliance with biosecurity protocols by individuals working on the operation and visitors is an ongoing challenge for the operation. The biosecurity plan can only be effective if EVERYONE on the operation follows it, all of the time. Ideally, compliance with the biosecurity protocols should become part of the culture of the operation. Poor compliance is usually due to lack of knowledge or understanding of either the biosecurity protocols or the consequences if they do not comply.

The Biosecurity Manager(s), owners or general managers, and essential personnel should be trained at least annually to ensure their awareness of the biosecurity measures necessary to keep FMD out of the herd. There are many resources available on the Secure Beef Supply website (www.securebeef.org). The Biosecurity Manager(s) needs to inform individuals entering the operation of the biosecurity measures they are to follow in a language they understand. Individuals must be made aware of the biosecurity concepts and procedures that apply to their specific areas of responsibility.

All individuals entering must understand how to:

- Contact the Biosecurity Manager(s)
- Respect the Line of Separation (LOS)
- Cross the LOS, if required, following arrival and biosecure entry requirements
- Perform biosecurity measures for their specific job duties

Essential personnel must ALSO:

- Understand the importance of biosecurity;
- Review the entire biosecurity plan;
- Review the labeled premises map;
- Know who to report to if they see someone not complying or something preventing compliance; and
- Recognize the consequences for not complying with biosecurity protocols.

The Biosecurity Manager communicates with all drivers, delivery and service personnel, veterinarians, livestock transporters, cattle suppliers, cattle receivers, and visitors to promote awareness of biosecurity expectations and operation-specific biosecurity protocols prior to arrival at the operation. Communication of protocols may involve calling, emailing, texting, or faxing information to individuals prior to arrival or communicating with these individuals upon arrival, prior to entry.

Effective training can be done through one-on-one or group sessions, depending on the responsibilities of the individuals and their learning style. Document training sessions for essential personnel and all communication with other individuals arriving on the operation (an example Group Training Form can be found at: https://securebeef.org/Assets/SBS_GroupTrainingForm.pdf).

- Example: After a training session, have all attendees sign and date a document after attending a training session and include a copy of the training agenda/content reviewed.
- Example: Keep a copy of the document sent to off-site individuals describing where and how to cross the LOS at an LOS Access Point and their tasks (remain in cab, exit wearing protective boots/gloves, etc.) and have them sign it upon first arrival.

The Biosecurity Manager should continually emphasize the importance of biosecurity protocols for disease prevention. Communication of biosecurity is vital to any operation to protect cattle health. Individuals should be encouraged to communicate with the Biosecurity Manager if they have questions or concerns.

3. Protecting Your Cattle

Line of Separation (LOS)

The biosecurity plan includes an LOS, which is established as an outer control boundary around, or within, the premises to limit movement of virus into areas where susceptible animals can be exposed. The LOS is clearly defined in the biosecurity plan and is clearly marked on the premises. Animals, vehicles, people or items only cross the LOS through clearly marked and controlled LOS Access Point(s), following appropriate biosecurity measures. Cattle are prevented from nose-to-nose contact with livestock on adjacent premises. Cattle do not have access to streams, waterways, or run-off water that may have come from other premises.

The Biosecurity Manager should identify a Line of Separation (LOS), which is a clearly identified boundary around, or within, the operation to separate off-site from on-site movements of vehicles, items, people and animals. The purpose of the LOS is to limit movement of virus into areas where susceptible

animals can be exposed directly (animal contact) and indirectly (contaminated vehicles, footwear, equipment, run off). Access should only be allowed through a minimum number of clearly marked and controlled LOS Access Point(s) following appropriate biosecurity measures.

Once the LOS is established, it should not move unless areas which were outside of the LOS are cleaned and disinfected before being moved inside the LOS. A modified LOS may be needed during crop harvest when bringing in feedstuffs. This is further explained in Section 4 of this Manual (Vehicles and Equipment). It is important to establish a firm understanding of the LOS concept with all employees, visitors, and service personnel. The boundaries of the LOS need to be included on the premises map.

The LOS may be located along the property line or another boundary within the operation (for example, near the cattle loading/unloading area). When determining the best location for the LOS, the following should be considered:

- Animal housing and holding areas
 - Traffic on roadways outside the LOS could be carrying FMD virus in organic matter (mud, manure, and run-off); ensure the LOS is located some distance from animal housing (cattle raised by the operation and other susceptible species) and holding areas so off-site organic matter does not cross the LOS onto the operation.
 - The distance from the LOS to animal housing will depend on the drive path surface (farther from dirt/gravel than paved), weather extremes (farther if rain/snow will cause vehicle tires to kick up liquid/organic matter into animal housing) and what is known about the FMD virus and its infectivity. There is not a specified distance as it varies with the above conditions.
- Animal movement patterns
- Water sources
 - Cattle should not have access to water sources (ponds, streams, creeks, waterways, or run-off water) that may be shared or have come from another livestock premises.
 - This can also be accomplished by not using certain lots or pastures, providing temporary or portable water tanks, or installing a temporary electric fence around shared water sources.
- Drive path slope and ground topography (paved, gravel, dirt)
 - Consider volume and direction of runoff
- Weather conditions (rain, snow, mud) effect on drive paths near LOS Access Point(s)
 - This includes natural accumulation as well as plow routes and storage of snow and ice.
- Use of the premises by hunters
 - During an FMD outbreak, hunters must observe the biosecurity requirements for crossing the LOS and should not move between premises without observing biosecurity protocols
- Traffic patterns on and off of the operation
 - Minimize the need for individuals working on the operation and traffic to repeatedly cross the LOS for daily activities
 - Select the fewest number of LOS Access Point(s)
- Use of scales
 - Determine if scales are primarily for off-farm weights (incoming cattle, outgoing cattle) or for on-farm weights (mixed feed being offered, determining pen/lot weights, etc.)
- Ease of access to residences, maintenance shops, or other non-animal business entities (school bus, postal deliveries, non-farm employee vehicles, etc.)
 - Exclude these from the LOS whenever possible
- Non-essential deliveries
 - Designate a delivery area outside the LOS or at another location
- Planned construction projects

- Adjacent premises
 - Cattle should always be prevented from nose-to-nose contact with livestock on adjacent premises

Multiple options exist for operations with cattle on pasture to establish the LOS and they are highly dependent upon the layout of the operation, traffic patterns, inputs and outputs. A table to assist in identification of various inputs/outputs to the operation is available at: http://securebeef.org/Assets/SBS_Inputs-Outputs.pdf. This, along with the Biosecurity Manager’s operational knowledge of the operation can create a well-placed LOS. Examples of options for layouts of the LOS are available at: http://securebeef.org/Assets/SBS_LOSExample_Pasture.pdf.

The LOS boundaries should be clearly identified (road, posts, fences, flags, spray paint, ropes, etc.) and visible to individuals working on the operation, visitors, and service or delivery personnel so that no one crosses the LOS without following the proper biosecurity measures. Vehicles and individuals remaining within the LOS will avoid areas potentially contaminated with FMD virus.

LOS Access Point(s)

Entry to the operation is restricted to a limited number of controlled LOS Access Points. These LOS Access Points are protected with a suitable barrier (e.g., gate, cable, rope) to prevent unauthorized vehicles from entering. Each LOS Access Point is clearly marked with a sign in a language understood by all entering. Vehicles moving through an LOS Access Point are cleaned to remove visible contamination and then disinfected. People and items crossing through LOS Access Points follow appropriate specific biosecurity steps. The animal loading/unloading area does not serve as an entry point for people entering the operation. All movements (animals, vehicles, equipment, people) across the LOS are recorded and are available for review upon request. Deliveries not essential to the operation are made outside the LOS at a designated area indicated on the premises map.

Determine the LOS Access Point(s) based on current and expected traffic patterns and suitability for a cleaning and disinfection (C&D) station. The LOS Access Points should be limited in number; the more LOS Access Points, the harder it is to ensure biosecurity protocols are being followed. If there is a location that is currently used for the majority of vehicle and equipment traffic, or a pathway that individuals working on the operation use to enter it from a designated parking area, then that location would be a logical place for an LOS Access Point. The LOS Access Point should not be adjacent to animal housing or holding areas, unless the purpose of the LOS Access Point is to enter cattle areas, such as a pasture where cattle are grazing or a loading/unloading LOS Access Point for cattle.

The extensive land base and operation perimeter of many operations with cattle on pasture may require unique approaches that allow for an LOS that covers many acres, with multiple LOS Access Points; for example, a cattle LOS Access Point in each pasture’s load out facility.

All other unused driveways that are not LOS Access Points need to be protected with a suitable barrier (hay bales, semi-trucks, heavy equipment, etc.) to prevent unauthorized vehicles and people from entering.

Communicating the LOS Access Point

Each LOS Access Point should be clearly marked with signs, in a language understood by all entering, for all traffic entering the operation (e.g., vehicles, people, etc.). Signs should include instructions for biosecurity protocols regarding animals, people, vehicles, and items crossing the LOS, or should direct individuals to where they can access these protocols. This is especially important in remote areas, when the operation is not able to physically monitor the access points. These protocols should be communicated with visitors, personnel, etc. prior to arrival. Additional methods to mark the LOS Access Point may

include physical and/or visual barriers and signage, including (but not limited to): gates, benches, spray paint, duct tape, etc.

The LOS Access Point(s) must be included in the premises map; communicate the location(s) of the LOS Access Point(s) to all authorized individuals crossing the LOS.

Movement of animals onto the operation could introduce FMD virus if biosecurity protocols are not followed. Incoming animals may require a movement permit if the origin or destination is within a Control Area. Biosecurity protocols for animals crossing the LOS are found in [Section 6](#) of this Manual (Animal Movement). Movement of livestock transporters and vehicles through the LOS Access Point(s) requires following biosecurity measures as outlined in [Section 5](#) (Personnel) and [Section 4](#) (Vehicles and Equipment) of this Manual, respectively.

Movement of people through the LOS Access Point(s) requires following biosecurity measures as outlined in [Section 5](#) of this Manual (Personnel). At a minimum, ensure individuals have a place to change their clothing and change or disinfect their footwear, etc.

Movement of personal items and food across the LOS is limited to that which is necessary to perform job duties and the items must be clean and not worn/used around susceptible species (hats, glasses, cell phones, lunch bags), or cleaned and disinfected before crossing. Food is consumed in designated areas and should not be brought into cattle areas. Signage with reminders or instructions should be posted at the LOS Access Points.

Deliveries that do not need to be made to the animal site (e.g., parcel deliveries) should be made to a designated area outside of the LOS. This designated area should be labeled on the premises map, or, if non-essential items are to be delivered to an off-site location (e.g., post office, residence), this should be clearly indicated in the biosecurity plan and signs posted at the operation entrances.

Movement of vehicles, equipment and supplies across the LOS requires an operational cleaning and disinfection (C&D) station at the LOS Access Point as outlined below. More information on C&D of vehicles and equipment can be found in [Section 4](#) of this Manual (Vehicles and Equipment).

All records of animal, vehicle, and equipment movements by date and time onto the operation should be maintained on site and made available to Responsible Regulatory Officials in the event it is needed for a trace-back or trace-forward investigation. Logs for Vehicle/Equipment Entry and Deliveries can be found at: https://securebeef.org/Assets/SBS_VehicleEntryLog.pdf and Animal Movement logs at: http://securebeef.org/Assets/SBS_AnimalMovementLog.pdf.

Cleaning and Disinfection (C&D) Station

There is an operational, clearly marked, and equipped C&D station ready to be used in the event of an FMD outbreak. The C&D station has the means to remove visible contamination and then disinfect vehicles, equipment, and items needing to cross the LOS. The C&D station is operated by individuals who have received documented training in proper selection and use of personal protective equipment and the principles of C&D. Runoff from the C&D station is managed in a manner that prevents exposure of susceptible animals (either on or off the premises of origin) to disease agents and meets state, local, and Responsible Regulatory Officials' regulations. Care should be taken to ensure it does not enter waterways, animal housing, or on-farm traffic areas. The biosecurity plan contains contingency plans for vehicle and equipment C&D in inclement weather.

All vehicles, equipment, and items crossing the LOS are free of visible contamination and disinfected prior to entry, which is best accomplished at a Cleaning and Disinfection (C&D) Station designated for the operation. At least one stationary or mobile C&D Station should be available near an LOS Access Point to clean and disinfect vehicles, equipment, and items prior to crossing. The C&D stations should be

equipped with good lighting, adequate water, soap, and a disinfectant effective against FMD virus. As some locations where cattle are raised on pasture may be remote and lack access to water or electricity, portable power and water sources (generators, water tanks) should be available. Basic steps, supplies needed, an example Standard Operating Procedure (SOP) for the C&D process, and a video can be found at: <https://securebeef.org/training-materials/biosecurity/>. For a list of Environmental Protection Agency (EPA) registered disinfectants labeled for FMD virus, visit: <https://www.aphis.usda.gov/sites/default/files/fmd-virus-disinfectants.pdf>.

FMD virus is stable in the environment and in organic material (mud, manure, feed and bedding). Virus stability increases at lower temperatures and with protection from sunlight. FMD virus is inactivated at pH below 6.0 or above 9. To kill the FMD virus, it is important to use an effective disinfectant appropriate to the surface and to allow for proper wet contact times and adequate drying.

Designated individuals operating the C&D station should be trained in proper selection and use of personal protective equipment (PPE), how to effectively clean and disinfect items so they do not introduce virus to the operation, and how to safely use approved disinfectants. The PPE necessary is dependent on the disinfectant used; consult the label for more information.

When determining the location of the C&D Station, or where to accomplish cleaning and disinfection at each location in the case of mobile C&D Stations, consider the following:

- The wash pad at the C&D Station, or the area used to C&D, should be free of dirt/mud (ideally on a hard/solid/paved or well-drained gravel surface)
- The wash pad/C&D area and surrounding space should be sloped AWAY from animal housing, waterways, feed receiving or storage areas, and on-farm animal or vehicle traffic areas.
- All applicable state or local regulations regarding the management (capture/diversion) of the run-off/effluent should be followed. This may require building drainage ditches, berms, or other physical barriers to ensure susceptible animals are not exposed.

Contingency Plan for Inclement Weather

Effective C&D can be difficult in the winter in northern climates, remote locations, or during severe weather events unless conducted inside a building. Create a contingency plan for inclement weather and include this in the biosecurity plan. Below are a few suggestions.

- Contingency plans may include:
 - Creating a sheltered C&D station;
 - Using another structure on the premises (but outside of the LOS) as a temporary C&D station during inclement weather, or
 - Designating an off-site location, such as a truck wash, for washing all vehicles and equipment arriving on site during inclement weather.
 - Vehicles or equipment cleaned and disinfected off-site must arrive free of visible contamination, and must not have been on any other premises with FMD-susceptible species after cleaning and disinfecting.
 - Determining alternate delivery options or on-site drive paths.
 - See [Section 4](#) of this Manual (Vehicles and Equipment) for options for feed delivery and livestock load out.
 - Using a heated water source for C&D.

The C&D station(s) should be marked on the premises map.

Designated Parking Area

There is a clearly marked, designated parking area outside of the LOS, away from animal areas, for vehicles that will not enter the LOS and have not been cleaned and disinfected.

Designated parking areas outside of the LOS for employee and visitor vehicles minimizes the need to clean and disinfect them upon arrival and reduces the chance of FMD virus on vehicles crossing to the cattle side of the LOS. Locate the parking area where individuals can conveniently walk to the nearest LOS Access Point to better ensure compliance.

Signs should be posted designating the parking area, to ensure vehicles remain away from the LOS and thus, animal areas, and the LOS Access Point(s). The designated parking area should be labeled on the premises map.

Designated vehicles that remain within the LOS should be available for individuals needing to haul equipment, supplies, or treatment materials to the animals since personal or company vehicles will be prohibited entry without C&D.

Maximize Distance between Susceptible Livestock on Adjacent Premises

The distance is maximized between susceptible livestock on adjacent premises, and steps to do so have been coordinated with owners/operators of these premises.

During an FMD outbreak, the distance between susceptible livestock on adjacent premises should be maximized. This can be accomplished by alternating use of grazing land, penning cattle and bringing forage to them, coordinating pasture use with neighbors, or putting up supplemental fencing, such as a temporary electric fence, on your premises to create distance between shared fence lines.

Grazing Public Lands

Cattle grazed on public lands have some unique FMD exposure risk challenges. Creating an effective Line of Separation (LOS) for livestock grazing vast open rangelands is not realistic. Public land grazers need to be aware of the exposure risks as described in the [Management Practices and FMD Exposure Risks for Sheep and Cattle Grazing Federal Public Lands](#) document found on the SBS Grazing Public Lands web page at: <https://www.securebeef.org/beef-producers/public-land-grazing/>. Also on that web page is the “*Just-in-Time Biosecurity and Exposure Questionnaire for FMD: Livestock Grazing Public Lands*”. State or Federal Animal Health Officials may request completion of that document when ranchers apply for a movement permit from a Control Area involving public lands. They may also conduct interviews with ranchers or observe practices (in person or virtually) to collect this information. Producers are encouraged to develop an enhanced biosecurity plan that meets the items in the *Self-Assessment Checklist for Enhanced Biosecurity for FMD Prevention* for their base property if livestock reside there at any time.

4. Vehicles and Equipment

All records of vehicle and equipment movements by date and time onto the operation should be maintained on-site and made available to Responsible Regulatory Officials in the event it is needed for a trace-back or trace-forward investigation. A log for Vehicle/Equipment Entry and Deliveries can be found at: https://securebeef.org/Assets/SBS_VehicleEntryLog.pdf.

Vehicles and Equipment (non-animal transport)

All vehicles and equipment (not containing live animals) are cleaned and effectively disinfected prior to crossing the LOS, otherwise entry is prohibited.

Public roadways in the Control Area may be contaminated with FMD virus. Therefore, allowing only vehicles and equipment across the LOS which are free of visible contamination and effectively disinfected at the operation's C&D Station is important to reduce the chance of introducing virus; see [Section 3](#) of this Manual (Protecting the Operation: Cleaning and Disinfection Stations) for more information. Basic steps, supplies needed, an example Standard Operating Procedure (SOP) for the C&D process, and a video can be found at: <https://securebeef.org/training-materials/biosecurity> See [Resources](#) for a link to the Environmental Protection Agency (EPA) list of registered disinfectants labeled for FMD virus. Whenever possible, operation-dedicated equipment should be used and should not be shared unless absolutely necessary.

Entry of feed wagons, farm trucks, 4-wheelers, utility vehicles, and any other vehicles or equipment (e.g., skid loaders, commodity feed trucks, service personnel vehicles,) that have exited the operation and are returning, or originate off-site, needs to be done in a biosecure manner. Vehicles and equipment remaining inside the LOS do not need to go through C&D procedures unless it exits and is returning across the LOS. In some cases, if vehicles and equipment are remaining on the operation but must drive on off-site roadways to access pastures, it may be possible to C&D only the surfaces that have contacted potentially contaminated areas (e.g., tires, bottom surface of footwear). For examples, see [Section 5](#) of this Manual (Biosecurity Entry/Exit Procedure). Vehicles and equipment that remain outside of the LOS do not need to be cleaned and disinfected.

Effective disinfection of vehicles and equipment requires thorough cleaning to remove visible contamination, application of a disinfectant labeled for FMD virus, then allowing time for the disinfectant to kill the virus. Alternatively, heat may be used to kill viruses after thorough cleaning.

Harvest vehicles and equipment (combines, auger carts, wagons, semi-trucks) used to haul crops (hay, silage, grain) may enter the operation frequently to deliver feedstuffs over a short period of time, a few times a year. These vehicles and equipment are difficult to effectively clean and disinfect and pose a risk of introducing virus from contaminated roadways. During crop harvest, the LOS may need to be temporarily modified to create a direct path to the feed storage area that does not overlap with vehicles used inside the LOS to feed or contact animals. Access to this area should be restricted to crop delivery vehicles and equipment **ONLY** during this time. If the drive path is near animals, consider temporarily moving those animals. During this modification of the LOS, this drive path should **NOT** be used by vehicles that are used inside the LOS to feed or contact animals. Alternative routes for getting feed out of this area daily need to be made that do not cross paths with the harvest vehicles.

It is still important to minimize the amount of organic material carried into this modified LOS area from roadways. Visible material on tires/undercarriage should still be removed prior to entering the premises, with every effort made to not spray the feedstuffs (hay, silage, grain) carried on the vehicle. Once visible material has been removed, the harvest vehicles/equipment should drive directly to the feed storage area. The vehicle disinfection step can be skipped – rather the drive path should be cleaned and disinfected after harvest/feed delivery is complete, ensuring run-off/effluent does not enter animal housing, waterways, or traffic areas within the LOS. Once the area is decontaminated, the LOS can be re-established as it was prior to harvest.

Further information on contingency plans for vehicle and equipment C&D in inclement weather can be found in [Section 3](#) of this Manual (Protecting the Operation: Cleaning and Disinfection Stations).

Livestock Trucks/Trailers (animal transport vehicles)

All empty animal transport vehicles that cross the LOS are cleaned and effectively disinfected prior to arrival at the operation (outgoing loads) or before animals were loaded for delivery to the operation (incoming loads).

Livestock transporters originating from separate operations and their vehicle, even if cattle are under the same ownership and/or management, may introduce FMD virus to the operation unless proper biosecurity protocols are followed. Information specific to livestock transporters can be found under [Section 5](#) of this Manual (Personnel) under [Biosecure Entry/Exit Procedure](#).

Communicate with the source of incoming animals and with the transporter to ensure that all animal transport vehicles were cleaned and effectively disinfected prior to the loading of animals for delivery to the operation. Document all communication.

Empty livestock trucks/trailers must be free of all visible contamination (inside and out) and then disinfected before crossing the LOS at an LOS Access Point.

Occupied livestock trucks/trailers cannot be effectively C&D with animals on board and should not physically cross the LOS. They have the potential to introduce FMD virus on their truck tires, and the interior contents (manure, urine, bedding) can spill onto the operation. One way to avoid vehicle entry is to use internal vehicles to transport animals to the LOS Access Point. Animals can be transferred using a staged area like a transport chute onto the trailer parked outside of the LOS. Animals could be introduced to the operation in this same manner.

If this is not possible, the vehicle should take only the shortest, most direct drive path to the loading/unloading site that is clean and minimizes passing close to susceptible animals. The area where the off-site vehicle drove and parked should be considered contaminated and a possible source of FMD virus introduction to the rest of the herd. In this situation, the drive path and loading site should be cleaned and disinfected. If it is a gravel or dirt path, this may be impossible and the risk cannot be mitigated. The Biosecurity Manager should ensure that individuals are trained in proper use of personal protective equipment (PPE), how to effectively C&D so virus is not introduced to the operation, and how to safely use approved disinfectants.

5. Personnel

Prior to Arriving at the Operation

Access is limited to individuals who are essential to the management of the operation. Everyone crossing the LOS on foot or exiting their vehicle inside the LOS arrives at the operation having showered and wearing clean clothing and footwear since last contacting susceptible animals. All individuals crossing the LOS have a signed agreement on file agreeing to follow these instructions.

Individuals arriving at the operation should not cross the LOS unless their job duties require doing so. Individuals that are crossing the LOS in their vehicle should remain in the cab unless their job duties require them to exit the vehicle. Biosecure entry procedures for individuals crossing the LOS but not contacting animals may vary based on their job duties. The Biosecurity Manager is responsible for communicating these requirements to all individuals.

Individuals and their clothing/footwear may become contaminated with FMD virus through a variety of activities and contacts when they are off-site such as:

- Living with people who work at other livestock production sites;

- Working at or visiting other livestock production sites (pig, cattle, sheep or goat);
- Working at or visiting livestock sales or shows, auction markets, veterinary clinics, buying stations, slaughter plants, or rendering facilities;
- Hunting or contact with feral swine, deer, etc.; and
- Stopping at a gas station which may have been previously visited by rendering truck drivers or livestock haulers.

It is possible to reduce the potential for people to introduce FMD virus by taking certain precautions prior to arrival at the operation. All individuals entering cattle areas should:

- Ensure that the inside of their vehicle is clean (free of all animal manure/excrement) and has not become contaminated by soiled clothes, footwear, or other items.
- Ensure they have showered and changed into clean clothes and footwear prior to arrival on the operation.
 - For individuals that work with the animals and live on-site, showering and changing into clean clothing/footwear before leaving their residence is necessary.
 - For individuals living off-site, after showering and changing into clean clothes and footwear, do NOT contact animals, live or dead, or facilities where they are held prior to arrival at the operation.
- Understand and be able to follow all procedures for crossing the LOS before arrival.
- Sign an agreement verifying they have been informed of these biosecurity protocols and will abide by them (example agreement in English and Spanish available at: <http://securebeef.org/Assets/Employee-Visitor-Agreement-Log.pdf>).

Entry Log

Everyone crossing the LOS Access Point(s) completes the entry log, unless they are a scheduled worker. The entry log is monitored by an individual working on the operation to ensure accurate completion. The contact information and work schedule records for all workers are maintained.

Prior to crossing the LOS, all individuals (other than scheduled workers) granted entrance must sign the Entry Log maintained on site. Information recorded includes (at minimum): name, phone number, reason for entry, and if they had livestock (cattle, pigs, sheep, goats) contact in the last seven days, and describe where (auction, feedlot, packing plant, exhibition, home, etc. and City/State).

The Biosecurity Manager should ensure the entry log is maintained. Operations can use existing entry log in any format, including electronic logs, if they contain the information described above or use the SBS People Entry Log at: http://securebeef.org/Assets/SBS_PeopleEntryLog.pdf. The entry log should be monitored by an individual working on the operation to ensure accurate completion. The entry log should be available for review and kept up-to-date.

Employee and family member contact information and work schedule records must be maintained and be accurate.

Biosecure Entry/Exit Procedure

All individuals who cross an LOS Access Point on foot or exit their vehicle inside the LOS ensure that visible contamination on their footwear, clothing or exposed skin does not enter or exit the operation, following the biosecure entry and exit procedure as specified in the biosecurity plan.

All individuals crossing the LOS on foot or exiting their vehicle should arrive at the operation having showered, wearing clean clothing and footwear. The inside of their vehicle should be clean and have no visible contamination (soiled clothes, footwear, or other items) that could transfer to their clean clothing,

clean footwear, and exposed skin. Additional biosecure entry procedures may vary based on whether or not individuals will have contact with animals or their manure/excretions.

Biosecure entry procedures should be communicated in writing to individuals frequenting the operation, including custom caretaking services and trucking companies so they can be shared with the truck drivers. One way to accomplish this is through development of Standard Operating Procedures (SOPs).

Animal handlers or those who may be contacting animal areas or their excretions on the operation (employees, family members, livestock transporters, veterinarians, processing crews, etc.) should also, at a minimum:

- Wear operation-dedicated clothing and footwear, OR
- Wear clean coveralls/protective outerwear and disposable or disinfectable footwear; AND
- Ensure hands are clean
 - Wash hands and/or
 - Wear disposable or disinfectable gloves over clean hands

These procedures should occur at the designated LOS Access Point. Individuals crossing the LOS in a vehicle should ensure that their footwear is cleaned and disinfected prior to stepping into the cab of the vehicle (if farm-dedicated), or while exiting the cab (off-site vehicles). Individuals driving off-site vehicles are encouraged to carry a change of street clothes/extra coveralls/protective outerwear in the event their street clothes become soiled with animal manure/excretions. The goal is to not transfer manure/excretions on clothing to the vehicle cab or from the operation to another livestock operation.

Non-animal handlers and those remaining away from animal areas on the operation (feed or other product delivery personnel, equipment service personnel, visitors, employees) should also, at a minimum:

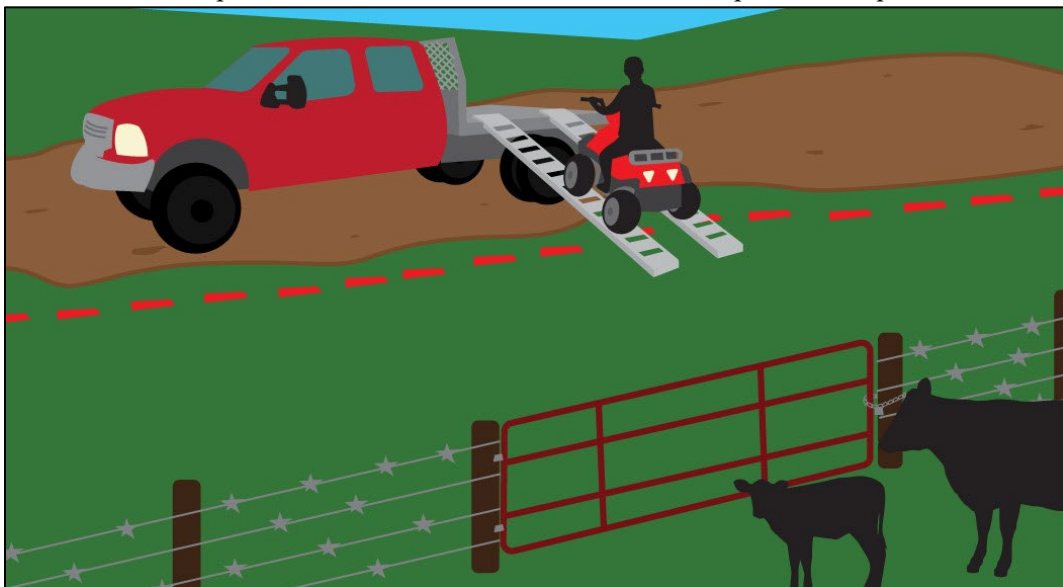
- Wear operation-dedicated footwear, OR
- Wear disposable or disinfectable footwear; AND
- Ensure hands are clean
 - Wash hands and/or
 - Wear disposable or disinfectable gloves over clean hands

These procedures should occur at the designated LOS Access Point. Individuals crossing the LOS in a vehicle should ensure that their footwear is cleaned and disinfected prior to stepping into the cab of the vehicle (if farm-dedicated), or while exiting the cab (off-site vehicles). If there is a possibility of direct contact with animals or animal manure/excretions, they should also wear operation-dedicated clothing or clean coveralls/protective outerwear.

Specific Biosecure Entry Procedures will vary depending on what is crossing the LOS at the LOS Access Point and on the layout of the operation. The goal is to protect the operation (including individual pastures, stubble fields, etc.) from virus that may be present on contaminated surfaces (roadways, equipment, or people). Several examples with visuals are provided below; an explanation follows the image.



In this example, consider someone who is entering a pasture on their tractor to deliver a round bale to cattle. The operation houses the tractor at the home farm, and public roads are driven on to access the pasture gate. The driver may use a portable sprayer to clean and then disinfect the tractor tires and their footwear (which have contacted potentially contaminated, off-farm surfaces) immediately before crossing the LOS Access Point at the pasture gate. Once the tractor and driver have crossed the LOS into the operation's pasture, C&D of their footwear when getting in and out of the tractor (to cut bale netting, check cattle, open the gate to exit the pasture, etc.) is not necessary because the inside of the farm-dedicated vehicle and the pasture within the LOS are both considered part of the operation.



Alternatively, a Biosecure Entry Procedure for someone who is checking cattle by ATV may consist of backing up the vehicle and trailer transporting the ATV close to the LOS, then unloading the premises-dedicated ATV using clean ramps that straddle the LOS. If this Biosecure Entry Procedure is used, the

person should C&D their footwear that has touched the ground outside of the LOS prior to stepping onto the farm-dedicated ATV. Once they are within the LOS, they do not need to C&D their footwear to open the gate or if they step off once they are in the pasture. The wheels of the ATV do not need to be C&D as they will not touch the ground outside of the LOS.



A person who is entering a small pasture on foot to check on newborn calves may also have a different approach; perhaps sitting on the tailgate of a pickup adjacent to the pasture gate to change footwear and put on coveralls/protective outerwear when crossing at an LOS Access Point. For another option to cross the LOS at an LOS Access Point if an indoor space is available, see the SBS Information Manual for Enhanced Biosecurity: Feedlots.

Keep on record all communications (written, oral, etc.) that occurred between the Biosecurity Manager and livestock transporters, delivery, or service personnel, including dates and times of said communication. For example, keep a copy of the information sent to the livestock transporter or feed company with a premises map showing where the livestock or feed trucks are to drive and what the drivers are supposed to wear (disposable footwear, disposable gloves, no hats, etc.).

Biosecure Exit Procedure

The goal is to prevent visible contamination on clothing, footwear, and exposed skin from leaving the operation and being transferred to other locations with susceptible species. Individuals should remove any protective outerwear and disposable footwear, clean and disinfect footwear, and remove gloves (and/or wash hands if soiled) before crossing the LOS. Soiled clothes should be enclosed in a garbage bag/tote and stored until they can be laundered/cleaned and disinfected. To facilitate this, individuals working on operations in this situation are encouraged to wear protective outerwear, such as coveralls, and footwear, such as overshoes or disposable boot covers, over their normal clothing, that can easily be removed upon crossing the LOS. Gloves and other disposable items should be enclosed in a garbage bag until able to be discarded, and hands should be cleaned with alcohol-based disinfecting wipes or hand sanitizers until access to warm water and soap is available.

6. Animal Movement

All animal movement into, out of, or through a Control Area requires a movement permit issued by Responsible Regulatory Officials. Permit movement criteria must be met before animal movement may occur in an effort to prevent spread of FMD virus between premises.

All records of animal movements onto the operation should be maintained on site and made available to Responsible Regulatory Officials in the event it is needed for a trace-back or trace-forward investigation. An Animal Movement Log is available at: http://securebeef.org/Assets/SBS_AnimalMovementLog.pdf that describes information that should be kept; alternatively, operations may use existing movement logbooks in any format, including electronic logs.

The Biosecurity Manager communicates all biosecurity procedures pertaining to animal movement with the source or destination of animals and/or with the transport companies. All communication is documented.

Incoming Animals

Animals come only from sources with documented enhanced biosecurity practices and no current or previous evidence of FMD infection.

It is not possible to prove that cattle are free of FMD virus; it is only possible to demonstrate lack of evidence of infection. A lack of evidence of infection means that, based on available surveillance tools, the cattle have no abnormal clinical signs and no visible lesions as documented by personnel on the operation; diagnostic test results may or may not be available. All incoming animals must come directly from a premises with no current or previous evidence of infection with FMD. Once infection occurs, spread within the herd is rapid (days). Prior to animal movement from a premises located within a Control Area, daily observation of all susceptible animals for at least 7 days is necessary to determine if there is evidence of infection with FMD. This process is called Active Observational Surveillance and is explained in the Secure Beef Supply Plan (www.securebeef.org).

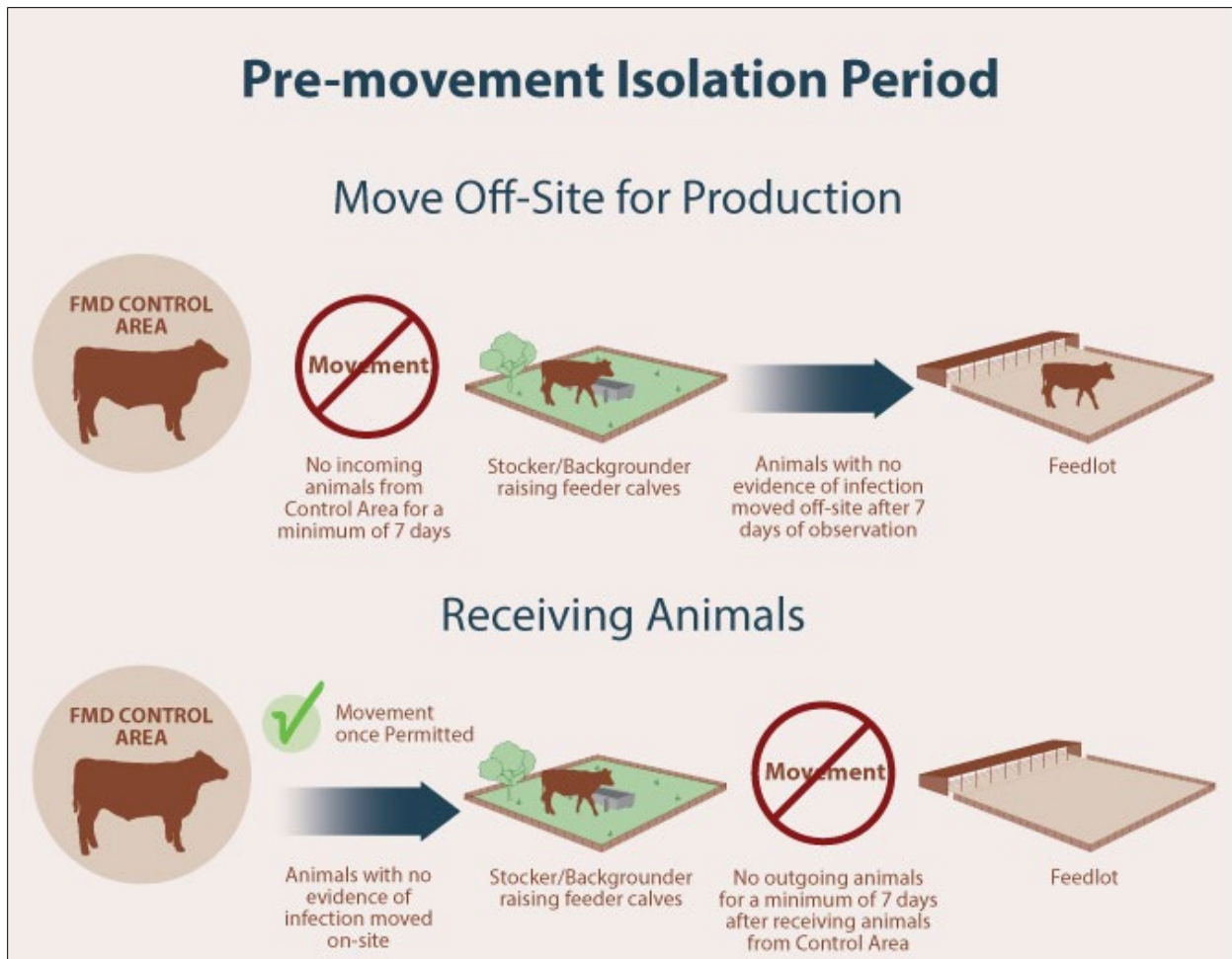
If incoming cattle are raised on an off-site premises before arriving at the operation, ensure that the off-site premises' biosecurity plan aligns with yours and their personnel are trained to look for signs of FMD.

Pre-movement Isolation Period

No animals from an FMD Control Area are introduced onto the operation for at least 7 days prior to moving animals to another production site with susceptible animals.

Animals from a Control Area are at a higher risk of being infected with FMD virus, but may be undetected clinically if in early stages of infection. Because of the increased risk any introduction of cattle from within a Control Area should be carefully considered. Restricting animal introduction onto the entire operation for a minimum of 7 days before any animals are moved off the operation to another production site will increase confidence that FMD virus was not introduced through animal movements. This does not apply if animals are being moved directly to slaughter, for instance in the case that slaughter plants begin accepting lighter weight cattle in the event of an outbreak.

For example, if a stocker/backgrounder accepts calves from a cow/calf operation that is within a Control Area on the first of the month, no shipments of feeder calves that are raised on the stocker/backgrounder to a feedlot should occur until the following week, on the 8th, at the earliest. This minimum of a one-week restricted entry provides added assurance to those receiving the animals that no clinical signs were found in the animals on the premises of origin. If the stocker/backgrounder does not wish to send any shipments of outgoing feeder calves other than direct to slaughter, there is no restricted entry time between incoming loads of calves. Feeder calves moving off of the stocker/backgrounder directly to slaughter may do so at any point in time once movement requirements have been met and a permit issued. This concept is described in the figure (below).



The pre-movement isolation period puts a 7-day period between different types of movements (incoming or outgoing), no matter which movement comes first. Shipments of incoming animals could occur more frequently than once per 7 days (for example, several shipments of calves could arrive at the operation on the same day, or loads of calves could arrive two days apart from one another), as long as there are then no outgoing shipments for 7 days after the last incoming shipment. Likewise, if no animals have been brought in for the prior 7 days, multiple loads of feeder calves could move off-site to a feedlot on the same or different days. In other words, movements of one type (incoming or outgoing) could occur frequently, but once the operation wants to switch the type of movement (from incoming to outgoing or vice versa), there is a 7-day isolation period.

Contingency Plan for Interrupted Animal Movement

A plan exists to manage animals in a biosecure manner on-site in the event animal movement is stopped for several weeks.

Cattle operations should develop plans to manage animals on-site for several weeks that would otherwise be moved to a different operation in the event of a movement restriction. This may include, for example, developing plans to raise weaned calves or feeder calves that are ready to move to feedlots to an older age and heavier weight if necessary. The plan should include considerations for feeding, handling space restrictions as the animals continue to grow, treatment of sick animals, and communication with feedlots on ability to accept heavier weight feeder calves. The plan should include welfare considerations and the possibility of humane euthanasia. Likewise, premises that supply your operation with cattle may not be allowed to move animals due to prolonged movement restrictions and should be prepared to care for these animals.

Occasionally, stocker/backgrounder operations may be involved in rearing replacement heifers. In some cases, such as in prolonged stop movement restrictions or unintentional breeding, heifers may deliver calves while on the stocker/backgrounder operation. In this case, the operation needs to have a plan to care for these calves for up to several weeks in the event animal movement is stopped. Describe the plan to provide housing to ensure protection from the elements, feed (nursing, milk, milk replacer, starter) to meet nutrient needs, and personnel trained in their health care and husbandry needs. Inventory to purchase new animal care items and equipment may be limited during an outbreak. Introducing items from other livestock operations poses a biosecurity risk unless protocols are followed.

Loading/Unloading Animals

The biosecurity plan describes whether or not the livestock truck crosses the LOS, the drive path to the animal loading/unloading area(s), and the capabilities to clean and disinfect between animal loading and unloading OR there are separate and dedicated animal loading and unloading areas that prevent cross-contamination. The animal loading/unloading area(s) is NOT a people entry point. These details are labeled on the premises map. Animals load-out using a staged procedure.

Animal loading/unloading areas **inside** the LOS require effective cleaning and disinfection (C&D) of the livestock trailer interior and exterior prior to loading animals at the origin and C&D of the exterior before crossing at an LOS Access Point at the destination. For more information on managing the livestock trailer, see [Section 4](#) of this Manual (Vehicles and Equipment). See [Resources](#) for a link to the Environmental Protection Agency (EPA) list of registered disinfectants labeled for FMD virus.

Terminology:

- Loading/load-out: Animals leaving a premises
- Unloading/load-in: Animals arriving at a premises

Effective interior and exterior C&D of livestock trucks/trailers to load-out animals from an operation can be challenging if there are not enough commercial truck washes in your area and/or if there are several load-outs needed in a short amount of time. On-farm C&D of livestock trucks/trailers may be difficult due to a lack of water access, inclement weather, and difficulties capturing runoff from the C&D process if required by regulatory agencies. If interior and exterior C&D is not possible, then the livestock truck/trailer **MUST**:

- Not cross the LOS, **AND**
- Not drive close to susceptible animals staying on the operation, **AND**
- Be destined for a terminal location (slaughter plant),

- **OR** -
- Be used **ONLY** for animals originating from the same herd/premises (no commingling or sharing trailers).

If it is not possible to C&D the interior and exterior of the livestock truck/trailer, then the loading/unloading area **MUST** be:

- Staged for load-out as shown in Figure 1 to ensure cattle, and personnel moving the cattle, cannot carry contamination from the truck/trailer and the load-out facility back across the LOS,
 - **AND** -
- Made of non-porous materials* that can be thoroughly cleaned and disinfected (C&D) under all weather conditions before cattle unloading to prevent potential exposure.
 - **OR** -
- Two separate areas (see Figure 2), each dedicated to one task – either animal loading or unloading – and located at some distance from each other that prevents cross-contamination of vehicles, personnel, equipment, and animal waste from each loading/unloading area.

*NOTE: If non-porous materials are not in place today and it is not feasible to construct new facilities, every effort must be made to remove manure and other bodily fluids after EVERY shipment of cattle and disinfect surfaces that cattle come in contact with such as walking surfaces, fences, cattle loading tubs, and chutes.

Using the staged load-out procedure (Figure 1) and having separate areas (Figure 2) further decreases the risk of disease transmission from contaminated trucks used for load-out. It also decreases the burden of having to C&D the shared loading/unloading facility and livestock trucks/trailers used for load-out.

Figure 1: Staged Animal Loading Area (animals leaving a premises)

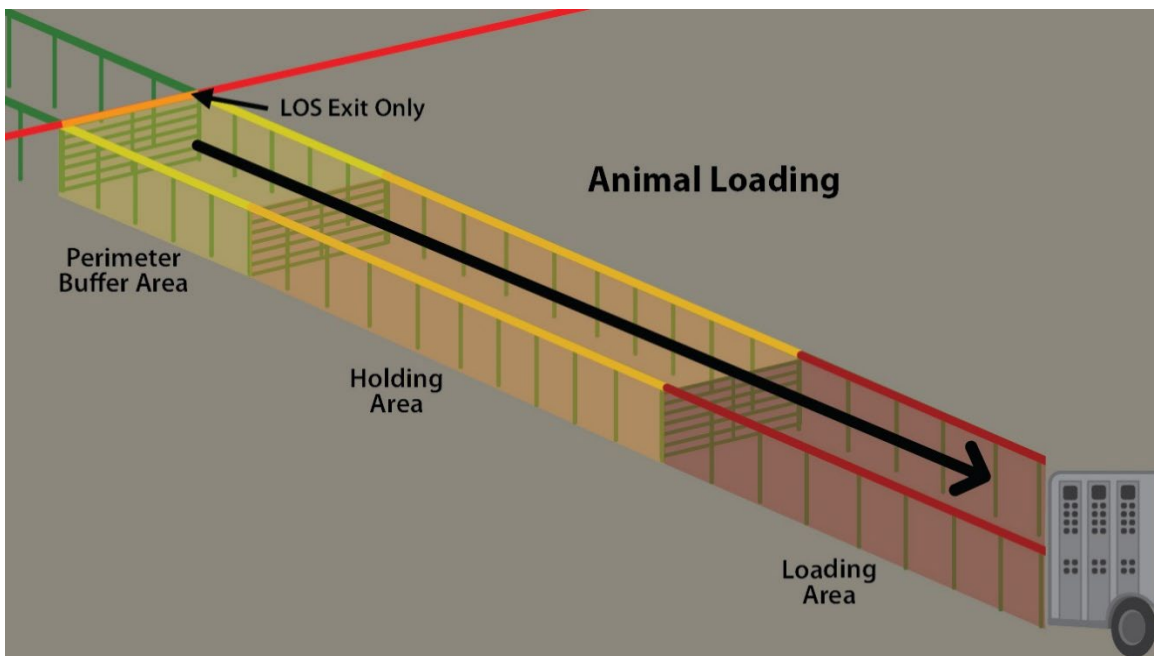
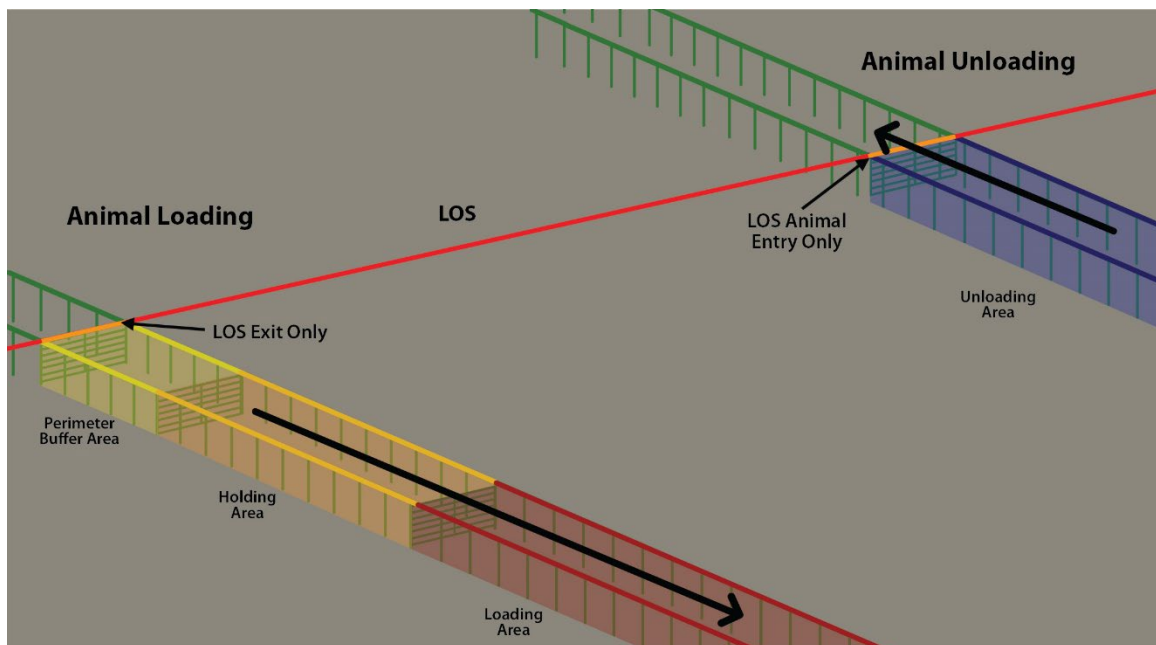


Figure 2: Separate and Dedicated Animal Loading and Unloading Areas



STAGED ANIMAL LOADING (SHARED OR DEDICATED): The LOS Access Point in the loading/unloading area(s) must be marked in a way that is always visible to individuals moving animals, even during load-out (when the floor/ground may be covered with manure and debris). There must be a Perimeter Buffer Area that the cattle move into after exiting the LOS to leave the operation (see Figure 1). The gate at the LOS is then closed. The Perimeter Buffer Area serves only as a pass-thru zone; cattle should not be held in this area. The cattle move through the Perimeter Buffer Area into a Holding Area; the handler closes a gate behind them. Cattle then move from the Holding Area to the Loading Area with a gate closed behind them. It may be necessary to use more than one handler during load-out during an FMD outbreak.

To decrease the risk of contamination, handlers should move in one direction only – towards the trailer being loaded – never backwards from the Loading Area to the Holding Area or to the Perimeter Buffer Area. If the handler exits the LOS with the cattle, the handler **should not** cross back to the inside of the LOS. To re-enter the LOS, handlers must follow the biosecure entry procedures at a people LOS Access Point. The load-out crew must be well trained. A person responsible for load-out biosecurity should observe the loading process to ensure that animals and personnel move in one direction during the loading process and do not carry contamination across the LOS.

ANIMAL UNLOADING (SAME AREA AS LOADING): The Perimeter Buffer Area, Holding Area, Loading Area, and loading chute must be made of non-porous materials* that can be thoroughly cleaned and disinfected (C&D) under all weather conditions before cattle unloading to prevent potential exposure to outgoing cattle manure/bodily fluids. These steps are necessary when the livestock truck/trailer being loaded has not had its interior and exterior thoroughly C&D as it is likely that the Holding Area and Loading Area may become contaminated while animals are being loaded out. The C&D process of the unloading facilities is essential to prevent incoming animals being exposed. See [Resources](#) for a link to the Environmental Protection Agency (EPA) list of registered disinfectants labeled for FMD virus.

*NOTE: If non-porous materials are not in place today and it is not feasible to construct new facilities, every effort must be made to remove manure and other bodily fluids after EVERY shipment of cattle and

disinfect surfaces that cattle come in contact with such as walking surfaces, fences, cattle loading tubs, and chutes.

ANIMAL UNLOADING (SEPARATE, DEDICATED AREA): The handler should not cross to the inside of the LOS through the animal entry point and should only enter through a people LOS Access Point while following the biosecure entry procedure. Though it is not necessary to C&D the dedicated animal unloading facility prior to each use, it should be maintained and kept as clean as possible. The facility should be located at some distance from the loading area and any isolation areas for new arrivals to prevent cross-contamination of vehicles, personnel, equipment, and animal waste from each loading/unloading area. Personnel who assisted with loading cattle onto trailers with interiors that were not C&D may be contaminated and must not help with unloading unless they have passed through a people LOS access point and followed the biosecure entry procedure.

The LOS Access Point and the loading/unloading area(s) must be clearly marked on the operation and labeled on the premises map.

For more information on managing the livestock trailer, see [Section 4](#) of this Manual (Vehicles and Equipment).

7. Animal Product Movement

Some operations raising cattle on pasture may need to bring in animal products such as semen or embryos, especially if they are involved with enterprises such as replacement heifer and seedstock development. Animal products transported on or off of these operations are potential sources for FMD virus spread.

Semen, Embryos

Semen and embryos collected after FMD has been diagnosed in the United States come from sources with documented, enhanced biosecurity practices and no current or previous evidence of FMD infection. Semen and embryos are transported in containers whose exteriors can be cleaned and effectively disinfected to minimize the risk of virus contamination.

FMD virus can be transmitted to cattle exposed through direct contact with, or from surfaces coming in contact with, contaminated semen and embryos. If semen and/or embryos arrive onto the operation, they must come from sources with documented biosecurity protocols and a historical and current lack of evidence of FMD infection (based on available surveillance tools, the cattle have no abnormal clinical signs and no visible lesions as documented by personnel at the operation; diagnostic test results may or may not be available).

Since semen can contain FMD virus before clinical signs are observed, it should be held, frozen, at the source herd for a minimum of 14 days after collection. If bulls do not show clinical signs today, the semen produced 14 days ago is very likely to be free from FMD infection. The risk of transmission of FMD in cattle via in vivo derived embryos has been shown to be negligible provided that the embryos are properly handled between collection and transfer in accordance with the IETS Manual. (See [WOAH Article 4.8.14, Recommendations regarding the risk of disease transmission via in vivo derived embryos](#)). Embryos collected from cows without clinical signs of FMD should be held, frozen, for a minimum of 14 days before placing into a recipient animal.

The source herd needs to document Active Observational Surveillance (as described in the SBS Plan) for at least 14 days prior to movement of product. Responsible Regulatory Officials may also require periodic inspection of donor animals by an Accredited Veterinarian and/or laboratory testing a sample from the

donor animal(s) to demonstrate a lack of evidence of infection prior to issuing a movement permit for semen or embryos.

Semen and embryos should be transported in containers that can be cleaned and effectively disinfected on the exterior as they cross the LOS to minimize the risk of virus introduction. The collection, storage, and transport of embryos and semen must be closely monitored, and these movements recorded, and biosecurity protocols must be followed to prevent exposure of disease agents to susceptible animals. An Animal Movement Log is available at: http://securebeef.org/Assets/SBS_AnimalMovementLog.pdf that includes records needed for animal and animal product (semen, embryos) movement.

Feeding Dairy Products

If cattle on the operation are fed dairy products, these products have been treated to World Organization for Animal Health (WOAH) recommendations for inactivation of FMD virus for animal consumption.

Some operations may occasionally feed dairy products in cattle diets (e.g., waste milk to calves, whey to feeder calves on stocker/background operations). Raw milk is a source of virus transmission to susceptible animals so it is important to use only milk or milk products that are manufactured according to WOAH recommendations for animal consumption. Normal high temperature – short time (HTST) pasteurization (72°C [161°F] for at least 15 seconds) does not completely inactivate all FMD virus in raw milk. FMD is not a public health or a food safety concern; it is an animal health disease. Additional treatment of raw milk or milk products is needed to prevent FMD virus transmission to susceptible animals (cattle, swine, sheep, and goats). This also applies to any waste milk fed to cattle. Waste milk may include expired grocery store products (pasteurized milk, yogurt, ice cream, cream, etc.) that may or may not undergo additional processing prior to being fed to cattle as part of their daily ration.

The World Organization for Animal Health (WOAH) sets the international sanitary standards for trade in animal products and are the guidelines to follow for inactivation of FMD virus in milk for animal consumption. World Organization for Animal Health (WOAH) Terrestrial Animal Health Code 2023, Article 8.8.36 describes:

Procedures for the [inactivation of the FMD virus in milk for animal consumption](#)

For the inactivation of viruses present in milk for animal consumption, one of the following procedures should be used:

- The HTST process applied twice (HTST is high temperature – short time pasteurization with a minimum temperature of 72°C [161°F] for at least 15 seconds); or
- HTST combined with another physical treatment, e.g. maintaining a pH 6 for at least one hour or additional heating to at least 72°C [161°F] combined with dessication; or
- UHT combined with another physical treatment referred to in point 2 above (UHT is ultra-high temperature with a minimum temperature of 132°C [270°F] for at least one second).

8. Carcass Disposal

Dead animals are disposed of in a manner that prevents the attraction of wildlife, rodents, and other scavengers. Rendering trucks and other vehicles hauling dead animals to a common disposal site do not cross the LOS.

Develop a plan for carcass disposal of all deceased cattle. The plan should include the process for removing dead cattle from pastures, pens, lots, and buildings as well as storage and disposal of carcasses in methods compliant with state and federal laws. These regulations may change during an FMD outbreak. Options for disposal may include burial, incineration, composting, or rendering—check with local authorities for the state and federal laws pertaining to animal disposal. Moving carcasses off-site during an FMD outbreak will likely require a movement permit. Guidance may also be provided by the regulatory officials managing the outbreak response. Landfills may not be a reliable option for disposal of carcasses in an FMD outbreak. Operations should develop a plan for carcass disposal of all deceased cattle using normal mortality numbers and a contingency plan for a large of mortalities unrelated to FMD infection (toxicity, etc.).

- Incineration or composting of carcasses from premises with no evidence of infection may be performed either on-site or off-site, inside the LOS or outside of the LOS (consider available land area and available equipment) as long as it is accomplished in a biosecure manner.
- Burial and composting must be accomplished in such a way that prevents wildlife, pets, and rodents from accessing the carcasses.
- Rendering trucks and other vehicles hauling dead animals to a common disposal site must not cross the LOS. The ideal location for a storage bin/area for rendering pickup is at the edge of the LOS, so that equipment used to move carcasses within the LOS does not need to exit the LOS and rendering trucks have access to the bin/area without the truck or personnel entering the LOS. Any site equipment exiting the LOS must go through C&D at an LOS Access Point before crossing the LOS back to the cattle side.

Carcass disposal options should be described in the biosecurity plan, including on-site and off-site possibilities, and carcass movement drawn on the premises map. For example, if rendering is used, the plan should describe how the animals are moved to the pickup location and demonstrate that the rendering truck never crosses the LOS. If the operation disposes of carcasses on-site, then the burial or compost location should be labeled on the premises map. The operation's animal disposal plan needs to be reviewed and updated at least once a year.

9. Manure Management

Manure is stored and removed in a manner that prevents exposure of susceptible animals (either on or off the premises of origin) to disease agents and meets state, local, and Responsible Regulatory Officials' regulations.

Techniques for manure management vary with the type of production system, physical characteristics of the operation, and weather. Infected animals shed FMD virus in their manure. Therefore, the risk of introducing FMD virus increases when manure handling equipment is shared between operations and personnel do not follow effective biosecurity protocols, including cleaning and disinfection. For these reasons, it is very important for the Biosecurity Manager to develop operation-specific standard operating procedures (SOPs) for manure management.

All individuals hauling manure must have showered and changed into clean clothes and footwear prior to arriving at the production site.

Vehicles and equipment contaminated with manure from cattle or other susceptible species from other premises are a potential source of infection. Therefore, require that all manure hauling vehicles and equipment from other sites come onto or return to the premises empty of manure and are cleaned to remove all manure, then disinfected with either heat, or a chemical disinfectant followed by drying, before crossing the LOS. These protocols should be shared in writing with any contract companies, and signed and dated when read. Whenever possible, operation-specific dedicated equipment should be used (for example, site-specific skid loaders) and equipment should not be shared unless absolutely necessary.

If the equipment cannot be effectively C&D, one way to remove manure from the operation could be to temporarily modify the LOS near the manure storage area during manure removal. The manure hauling vehicle should take only the shortest, most direct drive path to the manure storage area that minimizes passing close to susceptible animals. The area where the off-site vehicle drove and parked should be considered contaminated and a possible source of FMD virus introduction to the rest of the herd. After manure removal is completed, the LOS should be re-established by cleaning and disinfecting the area accessed during manure removal. Another way to avoid vehicle entry is to use internal vehicles to transport manure to the perimeter of the operation. Vehicles crossing the LOS may also be minimized by transferring manure from on-site to off-site vehicles using a staging area or loader bucket.

Contingency planning for long-term manure storage may be necessary for prolonged outbreaks. Spreading or storing manure off-site may not be a permitted movement depending on the risk of FMD virus spread; all local state and Responsible Regulatory Official regulations will need to be met.

For additional information on cleaning and disinfection visit: <https://securebeef.org/training-materials/biosecurity/>.

10. Wildlife, Rodent, and Other Animal Control

Control measures are in place to minimize interaction between cattle and other animals (deer, feral pigs, rodents, dogs, cats, etc.).

Free-roaming animals like wildlife, dogs, cats, rodents and birds can potentially spread FMD virus from infected to susceptible animals via contaminated fur, hooves, foot pads, feet/claws, or feathers. Complete exclusion of wildlife like deer, feral pigs, rodents and birds can be difficult, but every effort should be made to minimize interaction with cattle. Some operations may be unable to prevent interaction between cattle and wildlife, rodents, or other animals on certain operations, such as those operations in remote areas with cattle that graze on significant numbers of acres. It may be impossible to mitigate the risk in this case.

For operations where this is feasible, biosecurity measures that address wildlife, dogs, cats, rodents and birds fall into three categories: clean, exclude, and control.

Clean: General operation maintenance, weed/grass control around pens, lots, and buildings, pasture management/stewardship, sanitation and drainage are important because they reduce attraction of wildlife and rodents. Trash should be regularly removed and feed spills cleaned up immediately. Dead animals should be disposed of/removed promptly.

Exclude: Outdoor raised animals are at risk of wildlife contact. Sturdy, double fencing or fencing at a height that accounts for jumping deer (e.g. 8 feet) and aggressive feral pigs surrounding dry lots, pastures, and buildings housing cattle is one option that could be implemented. Complete exclusion of wildlife may not be possible.

Control: Bird control should follow local or state regulations. Access to cattle and feed areas by dogs and cats should be prevented during an outbreak. Ask neighbors to do the same to prevent roaming. Rodent control options could include:

- Operation designates a rodent control monitor for the operation who effectively implements a written rodent control plan. The Biosecurity Manager may also serve as the rodent control monitor.
 - Keep records current and ensure that they contain, at minimum, monthly entries. An example Rodent Station log is available at: http://securebeef.org/Assets/SBS_RodentStation.pdf.
- Operation uses a professional rodent control company.
 - Movement of pest control operators occurs through the LOS Access Point(s) and requires following biosecurity measures as outlined in [Section 5](#) of this Manual (Personnel).
 - Keep records (e.g., invoices or other documentation) provided by a licensed pest control operator describing rodent control measures for the operation.

State and local regulations for controlling wildlife, birds, insects, and rodents must be followed. Use of chemical control methods must follow all label directions and regulations to avoid contamination of cattle. While complete control may not be achieved, it should be attempted.

11. Feed

Feedstuffs are delivered, stored, mixed, and fed in a manner that minimizes contamination, and feed spills are cleaned up promptly to avoid attracting wildlife.

Feed delivery trucks that cross the LOS must be cleaned and disinfected before crossing. Alternatively, certain feedstuffs could be augered across the LOS into an on-site feed wagon or other vehicle/equipment to prevent entry of the feed delivery truck. Feedstuffs can be contaminated if exposed to wildlife carrying FMD virus. Therefore, feed ingredients should be stored in such a way that limits bird, rodent and other wildlife or domestic animal access. If using bagged feed, it should be elevated off the floor and proper rodent control procedures should be implemented in feed ingredient storage areas. All feed spills or feed ingredient spills should be cleaned up as soon as possible to minimize attraction of wildlife and rodents.

- Grain and feed should be stored and handled so that it cannot be contaminated or be treated to eliminate contamination.
- Grain and feed commodity delivery trailers should be covered during transport so that the contents cannot be contaminated.
- If possible, store finished feed and feed ingredients in closed bins or buildings which decrease the potential for contamination with disease agents.
- Follow good bunk and feed management practices. Dispose of feed refusals if not eaten in order to minimize moldy or spoiled material in bunks or feeders, which could attract bird, rodent, and other wildlife or domestic animals.

It is important to consider the entry and movement of feed delivery vehicles and the feed they carry when determining the best location for the LOS and Access Points.

List of Resources

Below is a list of internet resources mentioned in this document.

- Animal Movement Log
http://securebeef.org/Assets/SBS_AnimalMovementLog.pdf
- Cattle on Pasture LOS Example
http://securebeef.org/Assets/SBS_LOSExample_Pasture.pdf
- Cleaning and Disinfection Resources
<https://securebeef.org/training-materials/biosecurity/>

- Creating a Premises Map
http://securebeef.org/Assets/SBS_CreatingPremisesMap_Pasture.pdf
- Employee and Visitor Agreement
<http://securebeef.org/Assets/Employee-Visitor-Agreement-Log.pdf>
- Environmental Protection Agency (EPA) registered disinfectants labeled for FMD virus
<https://www.aphis.usda.gov/sites/default/files/fmd-virus-disinfectants.pdf>
- Group Training Form
https://securebeef.org/Assets/SBS_GroupTrainingForm.pdf
- Operation Inputs/Outputs
http://securebeef.org/Assets/SBS_Inputs-Outputs.pdf
- People Entry Log
http://securebeef.org/Assets/SBS_PeopleEntryLog.pdf
- Public Land Grazing resources
<https://www.securebeef.org/beef-producers/public-land-grazing/>
- Record of Checking Rodent Bait Stations http://securebeef.org/Assets/SBS_RodentStation.pdf
- Vehicle/Equipment Entry and Deliveries Log
https://securebeef.org/Assets/SBS_VehicleEntryLog.pdf
- World Organization for Animal Health (WOAH) Terrestrial Animal Health Code 2023, Article 4.8.14, Recommendations regarding the risk of disease transmission via in vivo derived embryos
https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmlfile=chapitre_coll_embryo_equid.htm
- World Organization for Animal Health (WOAH) Terrestrial Animal Health Code 2023, Article 8.8.36, Inactivation of FMD virus in milk for animal consumption
https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/index.php?id=169&L=1&htmlfile=chapitre_fmd.htm