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# **Review of Michigan's Tuberculosis Eradication Program, 2020**

# **2020 Review of Michigan's Tuberculosis Eradication Program**

## **Dates of the Review: August 24-28, 2020**

### **Executive Summary**

Retention of the Animal and Plant Health Inspection Service (APHIS) recognition of a zone is subject to annual review by the Administrator. Consistent with the requirements of title 9, *Code of Federal Regulations* (9 CFR), section 77.4, APHIS conducted an annual review of the Michigan bovine tuberculosis (TB) program the week of August 24-28, 2020.

Team members conducted individual and group phone interviews with Michigan Department of Agriculture and Rural Development (MDARD) and APHIS Veterinary Services (VS)-Michigan personnel, as well as document review in advance of the on-site review. Preliminary data/information was received as requested from MDARD, Michigan Department of Natural Resources (MDNR), APHIS Wildlife Services (WS) and Michigan VS staff. An entry video teleconference was conducted the week prior to the review on August 20, 2020. Group and individual interviews, on-site records review, and selected site visits and demonstrations accomplished the onsite review.

Areas for improvement were identified and are detailed in the report. Three specific issues were identified that impact multiple elements of the Memorandum of Understanding (MOU).

- Herd inventory reconciliations for herds in the Modified Accredited Zone (MAZ), although completed within described timelines, were incomplete and do not account for missing animals. This activity is critical to evaluate the effectiveness of existing movement controls associated with the MAZ.
- Herd plans are not developed until after the test and remove phase is complete.
- MDNR is not completing the required free-ranging deer surveillance in all six-buffer counties. This shortcoming will require MDARD to conduct TB testing of all cattle herds in at least three buffer counties.

### **Background**

In 2000, the TB status of Michigan was classified as Modified Accredited (MA). The State was granted split state status in 2004. The State gradually regained accredited free status in selected regions and counties. In 2014, 79 of Michigan's 83 counties regained split State status leaving four counties in the northeast end of the Lower Peninsula as MA.

Free-ranging white-tailed deer serve as a TB reservoir in the MAZ. The apparent prevalence of TB in deer in the inner 25 percent of the MAZ is 2.1 percent. The prevalence in the remainder of the MAZ and Presque Isle County is 0.4 percent.

Michigan has detected TB in 79 cattle herds, 4 captive cervid herds and 6 feedlots since 1997.

In calendar year 2020, four TB infected herds have been detected in Michigan as of the time of this review: two inside the MAZ and two outside the MAZ which are epidemiologically linked to herds in the MAZ.

The most recent MOU between APHIS, MDARD, and MDNR is dated December 16, 2019. The previous TB review was conducted September 16-20, 2019.

## **A. Review Objectives**

- I. Evaluate Michigan Department of Agriculture and Rural Development (MDARD) compliance with Article 5 of the Memorandum of Understanding (MOU)**
  - a. Requiring official electronic identification for any live cattle and bison moved from premises in the MAZ and Presque Isle County and the ability to retrieve information concerning animal identification and animal movement within 48 hours. Cattle may move from a premises and receive official electronic identification at a licensed livestock auction market if they do not cross a zonal boundary.
  - b. All MAZ and Presque Isle County cattle will be required to be double-tagged at the time of TB testing with a producer-supplied official electronic identification tag and a secondary identification tag. The goal is complete double-tagging for all Presque Isle County herds by July 1, 2021.
  - c. MDARD will maintain and enforce a certificate system to track interzone movements of live cattle from farm of origin to final destination from the MAZ and will implement the same process in Presque Isle County by July 1, 2020. This certificate system shall be substantially the same as 9 CFR 77.3 requirements for interstate movements.
  - d. Movement of live cattle (other than directly to slaughter) from herds in the MAZ and Presque Isle County that do not maintain Wildlife Risk Mitigated (WRM) verified status will be prohibited.
  - e. Movements of cattle and bison from the MAZ and Presque Isle County will be monitored in livestock auctions within the state on sale days to confirm that the cattle and bison are identified, tested, and permitted, as required, and through other methods as necessary to ensure compliance with requirements.
  - f. MDARD will utilize State authority to randomly intercept and inspect vehicles that are transporting livestock on public roads within Michigan for compliance with State and Federal split State status requirements and this MOU.
  - g. MDARD will include information regarding the following in the annual and semi-annual bovine TB reports (VS Form 6-38 Form narratives).
    1. MAZ - Counties of Alcona, Alpena, Montmorency, and Oscoda
    2. Presque Isle County
    3. Counties Surrounding the MAZ (Potentially including Cheboygan, Otsego, Crawford, Roscommon, Ogemaw, and Iosco
    4. Circle Testing
    5. Entire State
  - h. MDARD will conduct risk-based surveillance for bovine TB in cattle as follows (refer to MOU for detailed surveillance description).
    1. MAZ - Counties of Alcona, Alpena, Montmorency, and Oscoda
    2. Presque Isle County
    3. Counties Surrounding the MAZ (Potentially including Cheboygan, Otsego, Crawford, Roscommon, Ogemaw, and Iosco
    4. Circle Testing
    5. Entire State
  - i. MDARD will implement an Enhanced Wildlife Biosecurity (EWB) program for cattle herds located in the highest risk area of the MAZ in and around Deer Management Unit 452.

- j. Each herd located in the EWB area of the MAZ must enter into an agreement that allows APHIS WS access to conduct targeted deer removal on their farm.
- k. MDARD will complete herd inventory reconciliation for freezer beef herds and any whole herd test performed in the MAZ and Presque Isle County by regulatory or accredited veterinarians within 60 days of a whole herd test.
- l. A bovine TB management plan will be maintained and updated as significant developments occur that may alter the implementation of the plan, or within 6 months following the end of the bovine TB management plan period.

**II. Evaluate Michigan Department of Natural Resources compliance with Article 5 of the Memorandum of Understanding**

- a. Alcona, Alpena, Montmorency, and Oscoda Counties (aka MAZ): Active sampling of free-ranging deer at a rate of 2,800 deer annually in the MAZ.
- b. Cheboygan, Crawford, Iosco, Ogemaw, Otsego, and Roscommon Counties: Active sampling of free-ranging deer at a rate of 300 deer annually per county.
- c. Presque Isle County: Active sampling of free-ranging deer at a rate of at least 500 deer annually with a goal of testing 700 deer annually.
- d. Passive surveillance will be conducted through examination and testing of potentially lesioned animals submitted to the MDNR by hunters throughout Michigan. This surveillance will be in addition to any active surveillance.
- e. If bovine TB is detected by MDNR, active or passive surveillance in free-ranging cervids or TB is detected by MDARD in livestock in any county, excluding the counties listed in 1A through 1 C above, heightened active sampling of free-ranging deer will be initiated within a 10-mile radius of the location of the TB-positive animal, at a rate sufficient to detect a TB prevalence of at least percent with 95 percent confidence ( $\geq 300$  deer annually).
- f. MDNR will continue to assign conservation officers to enforce feeding and baiting bans in the TB area.
- g. MDNR will include information regarding the following in the annual bovine TB reports.

**III. Evaluate Animal and Plant Health Inspection Service Responsibilities**

- a. Providing expertise in epidemiology, diagnostic support, risk assessment, and testing.
- b. Providing assistance with improving slaughter surveillance at Federal slaughter establishments, including assisting MDARD with obtaining cattle movement data from other States
- c. Assisting with indemnity payments for diagnostic exposed cattle, bison, and those that are suspects to secondary TB testing
- d. Assisting with payments for animal and specimen transportation fees, laboratory analysis, data storage, and management support. APHIS will assume responsibility for timely appraisal and payment for animals indemnified with Federal funds.

- e. Assisting the cooperator with cattle and bison movement monitoring and compliance investigations involving movement of cattle between zones and interstate through the activities of APHIS Investigative and Enforcement Services officers.
- f. Providing sufficient APHIS WS personnel to carry out deer surveillance and targeted removal of deer on farms located within the MAZ and Presque Isle County. APHIS WS would also conduct WRM/EWB verification activities as time and personnel allow.
- g. Providing support for acquisition and development for electronic identification, hardware and software in accordance with animal disease traceability and U.S. Department of Agriculture (USDA) regulations. Provide data entry assistance necessary to monitor TB testing and animal movements within the MAZ and Presque Isle County, and between zones, and assist with fulfilling reporting requirements of split State status and this MOU.
- h. Reviewing the progress of the bovine TB eradication activities covered under the split state status and this MOU and reporting recommendations to the cooperators.
- i. Supporting implementation of the WRM project as outlined in Article 5, MDARD Responsibilities
- j. The cattle, bison, and cervid rules and regulations of the National TB Eradication Program will be followed, including VS Memos, VS Notices, and pertinent parts of the CFR; the Uniform Methods and Rules (UM&R), January 1, 2005, including any future revisions; and the Cervidae Uniform Methods and Rules, January, 1999, including any future revisions.

**IV. Evaluate progress on recommendations from the 2019 review and risk assessment.**

**V. Evaluate producer education and compliance within EWB area.**

- a. Determine producer understanding of WRM and EWB programs
- b. Determine producer confidence in program
- c. Evaluate ID compliance
- d. Determine consistency in application of standards

**B. Review Findings and Observations by Objective**

**I. Evaluate Michigan Department of Agriculture and Rural Development (MDARD) compliance with Article 5 of the Memorandum of Understanding (MOU)**

**Findings and Observations**

- a. There are multiple opportunities for assessment and assurance of producer compliance with animal identification requirements. MDARD and VS Michigan staff has adequate access to these data and have demonstrated skill in using these data to ascertain animal movements. MDARD and USDA staff conducts TB testing in the MAZ and ensure animals conform to official electronic identification at this time. For producers without

official electronic ID and secondary ID tags, MDARD has a supply of radio-frequency identification (RFID) and secondary tags, a.k.a. “Michigan tags” that can be provided, supply permitting. However, MDARD field staff noted that animals with “Michigan tags” have a lower market value so producers are encouraged to purchase their own identification tags. Although cattle may move from a premise and receive official electronic identification at a licensed livestock auction market if they do not cross a zonal boundary, in practice this should not occur because there are no licensed livestock markets in the MAZ. Presque Isle County is in the AFZ; however, animal movement is handled similar to herds within the MAZ. Animals from the MAZ entering Northern Michigan Livestock (NML) auction are not required to have a movement permit; however, each animal has multiple opportunities for identification with active and passive scanning of RFIDs throughout the marketing process. Importantly, each animal is manually scanned by MDARD staff and issues with ID can be investigated and rectified at this point. See point “I.e.” below for details. For movement of MAZ animals to other livestock markets, a permit is required, necessitating MDARD staff issuing the permit to verify animal ID requirements. Generally, animal RFID is assessed passively using panel readers in non-NML markets. MAZ animals moving from livestock markets require a permit by MDARD staff; animals are scanned manually by MDARD staff. All captured sightings are uploaded to USAHerds database. MDARD staff review these data for errors and reconcile inconsistencies. Some data from markets and herds in the AFZ may take longer than 48 hours to obtain because records need to be manually retrieved and processed. VS Michigan uses USAHerds data to assess traces and requests issuance of work orders for MDARD staff to provide data to perform these traces. VS Michigan reports that it is uncommon that requests for information and follow-up traces are not fulfilled within the expected 7 days and 21 days, respectively. VS Michigan provided an example of a trace matrix that was easily understandable. VS Michigan staff has constructed a database specific for gathering data animal inventories, traces, and findings from necropsies which is used in part to derive MOU-related metrics. One MDARD staff demonstrated use of USAHerds database to assess data quality and movements of animals in the recent past and those data were readily accessible, rapidly retrievable, and easily assessed within minutes.

- b. MDARD staff indicated there are 93 commercial herd owners with 103 premises and an additional 11 freezer beef herds in Presque Isle County; freezer beef herds are not required to use secondary ID tags. MDARD estimates that 28 percent of herds are currently in compliance based on 26 of 93 owners receiving an allocation of “Michigan tags.” However, this is a conservative estimate because use of other secondary ID is not currently tracked; one MDARD staff estimated 50 percent of herds were in compliance as of this review. Starting in March 2020, MDARD has promoted awareness of changes in animal identification requirements to producers and accredited veterinarians through attending multiple Presque Isle County zoning order meetings, notification to producers when herd tests are scheduled, and letters to producers and veterinarians in the county. Although “Michigan tags” are assigned to TB testing teams or provided to producers directly, MDARD testing staff recalled instances where they assisted producers in obtaining other types of secondary ID from local businesses to ensure requirements were met. MDARD does not apply secondary IDs to cattle that arrive at

markets without one. Animals arriving without RFID are handled as described in “I.a” above. MDARD anticipates all Presque Isle herds will have been tested for TB by December 31, 2020. MDARD and USDA perform most if not all the TB testing in Presque Isle County and they assure that the official ID and secondary ID requirements are met at test. However, herds that were TB tested between January 1, 2019, and July 1, 2020, were not required to use secondary ID tags; many herds tested during this time may not have secondary IDs. Beginning January 1, 2021, Presque Isle County herds will be required to have annual TB surveillance testing, like herds in the MAZ. Beginning July 1, 2021, cattle aged  $\geq 15$  days will require secondary ID for movement from a herd in Presque Isle County. Nearer to the July 1, 2021, deadline, MDARD intends to contact herd owners not known to be compliant for awareness and to provide “Michigan tags” if needed. The upcoming requirements will help assure MDARD has contact with all herds and can ensure double-tagging requirements are met. MDARD staff report the most common error is writing duplicate “Michigan tag” numbers. The double tagging requirement is not commonly confirmed by reviewing VS 6-22 forms; however, accredited veterinarians with issues in this regard have been requested to resolve those. Selected VS 6-22 forms were reviewed and suggested a high level of compliance with double animal identification and reporting both IDs on 6-22s which is expected given MDARD standards. On farm visits with selected beef and dairy producers supported this finding.

- c. Animal movements out of the MAZ are done under permit and require a test. The age for movement testing in MAZ and in Presque Isle County (beginning January 1, 2021) is 60 days or older. Because of this, the Michigan program quickly identified cattle that needed to be traced after finding a positive herd (#77) in the MAZ and these animals were removed and taken to the laboratory in short order. The MDRAD Animal Industries Division appears to have a good system in place to control the movement of cattle and domestic bison from their MAZ and the adjacent counties. The zoning order requires sufficient testing and movement permitting to prevent movement of bovine TB infected animals from their MAZ or Presque Isle County and/or to trace them if a breach should occur as apparently happened with herd #77. The animals from herd #77 that were subsequently found to be infected in herd #78 were 6-month-old heifers and were tested for movement on October 4, 2019, before sale on October 22, 2019. The animals that moved to feedlot #6 were 5-month-old steers that were tested for movement on October 4, 2019, before sale on October 22, 2019.

Requirements for movement of cattle from farms in the MAZ vary depending upon the WRM verification and whole herd testing status of the herd of origin, individual animal testing history, animal age, animal gender, destination type (slaughter plant vs. farm), and zone of destination. All animals are checked for compliance with requirements prior to issuance of a movement certificate or approval for sale at the Northern Michigan Livestock Exchange. The specific requirements for movement of cattle from farms in the MAZ and AFZ are contained in the zoning order. All TB testing procedures follow guidelines in the UM&R and associated USDA memorandum and notices and are performed in collaboration with the Michigan VS area office. MDARD appears to be complying with the terms of the MOU.

Surveillance in Michigan is conducted through annual whole herd testing of cattle herds (except freezer beef herds and approved feedlots) in the MAZ, targeted surveillance testing in the TB free zone, Federal inspection of cattle at USDA Food Safety and Inspection Service (FSIS) inspected plants within Michigan and other States, TB testing of cattle for movement, and epidemiologic investigations

Michigan conducts whole herd surveillance testing in the MAZ as follows:

- Breeding herds – annual whole herd testing
- Feeder Producers – annual whole herd testing
- Feedlots – annual whole herd testing
- Freezer Beef herds – not tested, but inspected annually

Slaughter surveillance is conducted by examination of cattle that are presented for slaughter at USDA FSIS inspected plants in Michigan and throughout the United States.

Michigan’s RFID requirement enables rapid traceability when needed. The Michigan Bovine TB Eradication Program requires all cattle moved from a Michigan premises to have official RFID ear tags. Premise ID’s are required on all separate physical addresses, which do receive a different premise ID number.

Biosecurity is addressed thru the WRM program and the EWB program. WRM verification is required for permitting of cattle from the MAZ. The EWB program is the most focused effort to prevent the introduction of bovine TB into cattle herds. Studies and epidemiologic investigations have determined that the occurrence of bovine TB in cattle herds can be related to the apparent prevalence levels of TB in deer surrounding a herd as well as herd management practices that mitigate the spread from potentially infected deer.

Although the WRM program has been successful in reducing management practices that are high risk, bovine TB infected herds continue to be identified in the MAZ, especially within DMU 452. In this area, the EWB program is needed to mitigate the higher risk associated with more infected deer.

MDARD has quarantine authority under the Animal Industry Division’s primary regulation, the “Animal Industry Act.” Within the act, the primary section for cattle TB discusses MDARD’s ability to create zones, which is an important tool for implementing requirements for herds in the TB area – that section is 287.709. For cervids, the primary sections are 287.730 a-d.

TB requirements are found in the zoning order from April 1, 2020, Establishment of Zones for Bovine TB (Identification, Testing, Certificate, and Movement Requirements). Pursuant to Public Act 466 of 1988, MCL 287.708 and MCL 287.709 (8)-(10).

The zoning order outlines the official identification, testing, certification, and movement requirements of cattle and bison from the MAZ, Presque Isle County, and the Accredited Free Zone (AFZ).



Quarantines are issued during TB testing as outlined in the UM&R and herds identified as infected with TB remain under quarantine until depopulated or until completion of a test-and-removal program. Any animals moved from a TB infected herd are moved on a VS 1-27 form and in a sealed trailer. In some situations, animals from a TB infected herd are moved into a feedlot or other facility for feeding cattle out to slaughter weight. If approved, these animals are moved on a VS 1-27 and in a sealed trailer to the feedlot and to the subsequent slaughter plant, and the remaining cattle are kept under quarantine at the site until sent to slaughter.

Trucks or trailers used for transport of TB test suspect or reactor cattle, or cattle from TB infected farms are cleaned and disinfected following use. All equipment used by MDARD or USDA staff are cleaned and disinfected prior to use on any other farms. Animals moved to other States must meet the requirements of the State of destination.

- d. Movement of live cattle (other than directly to slaughter) from herds in the MAZ and Presque Isle County that do not maintain WRM verified status are prohibited as per the April 1, 2020, zoning order. MDARD and APHIS WS appear to have done a good job of identifying herds and premises within the enhanced Wildlife Biosecurity Area (EWBA) and helping willing producers comply with the enhanced WRM verified status. Apparently, there are some producers who are not willing to attain the verified status and they are not allowed to move any live animals except directly to slaughter. MDARD has adequate safeguards (i.e. certificates and movement permit requirements), records data, and enforcement activity to assure compliance with this requirement. The producers from within the EWBA whom a review team member spoke with are in favor of the requirement and support MDARD's and APHIS WS efforts.
- e. This movement of livestock through markets was evaluated thoroughly during the 2019 review and therefore not prioritized during the 2020 review.
- f. NML is the primary livestock market for MAZ cattle; a permit to move cattle to this market is not required, but permits are required for movement to all other livestock markets in Michigan. To move MAZ cattle to markets other than NML, an owner must contact MDARD to receive a permit that is issued after verification of the zone of origin, whole herd test status, individual animal movement testing within previous 60 days, and WRM status. There is a multi-tiered system at NML to verify animal identification as well as cattle and premises verification and link this to the market invoice. The market invoice serves as an approved proxy for the movement permit to NML from a given premise in the MAZ. At check-in, NML staff use Fast Auction software to query the MDARD USAHerds database to verify the premise of origin's WRM status, zone of origin, and most recent whole herd test status prior to unloading. Loads from premises not completely verified are ordered to return to the origin farm for further follow-up by regulatory staff. Cattle from premises passing verification criteria are unloaded and they are assigned a backtag. MDARD staff manually scan each animal's RFID and link this ID with the backtag. Each animal's USAHerds record is queried to verify WRM status, last whole herd test date, zone of origin, and last individual animal test, which must be within 60 days prior to movement). Animals failing verification are retained for further follow-up, sent back to their origin, or restricted to move to slaughter only. The MDARD compliance unit follows up on

animals restricted to slaughter because of issues with verification. A minimum of two MDARD regulatory staff are onsite at this market on sale days. A passive RFID panel reader scans animal IDs to link the ID to the invoice prior to entering the auction ring. NML staff e-mail MDARD sale data within 24 hours post-auction and upload these data into USAHerds. MDARD staff review these data and correct any errors in USAHerds.

AFZ markets use passive scanning of RFID for traceability. MAZ origin cattle moving from an AFZ market must have a new permit issued from the market to their destination.

- g. Article 5 and 7 of the 2019 MOU requires 30 reporting metrics to be included in the annual and semiannual bovine TB reports. Approximately ½ of these metrics were not included in the fiscal year (FY) 2020 semiannual report. All required metrics were found to be present on the FY 2019 annual report and there are notations in several areas of the FY 2020 semiannual report stating the data would be included in the annual report only. MDARD TB program manager stated that they were unaware of the requirement for reporting in both semiannual and annual reports. The program manager also noted that some of the required reporting data may not be available or accessible for the semiannual report.
- h. MDARD will conduct risk-based surveillance for bovine TB in cattle as follows:
  - 1. MAZ Surveillance in the MAZ includes whole herd testing of all commercial herds annually. The team did not observe any inconsistencies in whole herd testing in the MAZ.
  - 2. Presque Isle County: In 2020, per the new MOU and zoning order, Presque Isle County herds that have not had a whole herd test after January 1, 2019, must complete a test before December 31, 2020. This is the testing that MDARD is doing this year. Prior to this requirement, they were doing triennial testing in the county and had a circle in 2019 around herd 75 where they were doing surveillance testing. At this time, there are 30 herds in the county that had not had a test since January 1, 2020, and they are in the process of testing those herds. MDARD currently has 9 of those 30 herds tested.

Beginning January 1, 2021, Presque Isle County herds will require the exact same testing as described in the MAZ section above.

- 3. Counties surrounding MAZ: MDARD has begun testing the required 150 herds in the buffer counties surrounding the MAZ. At the time of this report, 40 herds have been tested and 53 herds are scheduled for testing.
- 4. Circle testing: Circle testing is performed around any positive deer or cattle detections outside the MAZ or for any MAZ circles that extend beyond the MAZ boundary. MDARD sets a goal to complete circle testing within 6 months of detection. However, premises that cannot meet this timeline are placed under quarantine and a signed testing agreement is put in place. MDNR circle testing of free ranging deer continues for a period of 3 years following detection. MDARD completed all whole herd circle testing of cattle in 2019 and expects to complete all ongoing 2020 circle testing within the designated timeframes. MDNR failed to meet free range deer

sampling goals for 2020 due to laboratory closure and restrictions on field personnel. As discussed in other sections, deer sampling by MDNR has been complicated by multiple factors in 2020.

5. Entire State: Tracing of potential sources (6-4A), exposed animals (6-4B), and slaughter traces (6-35) are coordinated largely by VS Michigan staff and conducted by MDARD. Using data from animal movements recorded largely in USAHerds, VS Michigan and MDARD staff can ascertain origin and destination of MAZ animals quickly and efficiently. There is a delay in obtaining these data for animals moving through markets outside the MAZ because those records are often queried manually but are generally available. VS Michigan prepares work orders for MDARD for requests for information and traces with an anticipated turnaround of 7 days and 21 days, respectively; VS Michigan felt work orders were completed in the appropriate timeframe with few exceptions. An estimated 1 percent of traces end due to lack of ability to find the last known owner of an animal. Out-of-State traces comprise less than 2 percent of traces and information is generally not received on those but may be available through Emergency Management Response System (EMRS). Young male calves, referred to as “Deacon” calves are difficult to trace due to death loss and lack of traceability once they enter feeding slaughter channels; however, it is unlikely that these calves leave slaughter channels after entry. Although some traces in EMRS for animal movements out-of-State are not closed, it is unclear what proportion of open traces is impacted by lack of action of the receiving State. EMRS does not allow traces to be closed and considered completed unless both the origin and destination States complete the documentation for the work in the system. Therefore, if the receiving State performed the tracing work and did not complete the required EMRS process, Michigan is unable to close the trace as the origin State. Michigan animals are often accepted by Wisconsin and Pennsylvania; these States often have traces in EMRS that have not been completed.
- i. The EWB regulations have been implemented. Most herds that opted out of complying with EWB regulations have either decided to get out of the cattle business altogether or become freezer beef operations. Currently there are 148 cattle herds in the EWB. Of those, 100 are verified and 37 have chosen to be freezer beef operations. Eleven herds have opted out of the EWB program and plan to sell direct to slaughter only. A few larger herds in the EWB zone have opted out of the EWB program. There are currently 5 beef herds with over 25 head and 1 dairy with approximately 150 head of cattle who have opted out. There is one previously infected premise, #64, who has opted out of the EWB program. The owner signed an *Agreement for Continued Surveillance Following Test and Removal Protocol of Affected Herd* in April of 2017. Part of that plan specifies the owner will comply with the WRM action plan and maintain status in the program. The document specifically states the herd will be placed under quarantine if they do not follow this plan. The plan also states, “any violation or deviation from the *Agreement for Continued Surveillance Following Test and Removal Protocol of Affected Herd* on the part of the owners may also prevent them from receiving future indemnity payments.” This document has not been updated to allow the herd to opt out of the EWB program if that is the desire of the program. The dairy herd, which opted out, is especially troubling as there will be a significant number of animals on that

premise every year that would normally leave through the livestock market including cull animals and bull calves.

- j. All herds that are currently verified in the EWB area are allowing APHIS WS to conduct targeted deer removal.
- k. Inventory reconciliations on freezer beef herds are accomplished by sending either a veterinary medical officer or animal health technician to the premise on an annual basis to document the animals that are currently on the farm. At this time, the producer can be directly involved with the reconciliation process and the majority of the time any discrepancies and/or ID issues can be solved. These producers are asked to keep tags from any animal that is slaughtered on the farm or dies between visits. This process has been working well and in general, there are few problems with reconciliations on these premises.

Inventory reconciliations on whole herd tests do not always go as smoothly. The field veterinary medical officers are asked to reconcile the animals that are retagged from one year to the next. On premises where tag retention is good, this task is easily accomplished. This can be a challenge in larger herds where tag retention is a problem. Tag retention is variable and based on conversations with testing veterinarians and records review of whole herd test charts show tag loss can be greater than 10 percent in many herds. Loss of both Official Identification and the required secondary ID tag has occurred and has created situations where animals cannot be reconciled from one whole herd test to the next whole herd test. After the field veterinary medical officers reconcile and merge records on as many of the retags as they can, they will provide a list of animals missing from the previous herd test to the owner on caudal fold test read day. If the owner can account for any of these animals, this information will be entered into USAHerds. Once the test chart is turned in at the Atlanta, Michigan office, administrative staff will run a reconciliation report through USAHerds. If all animals are accounted for, the reconciliation is complete. If there are still animals missing from the previous test to the current test, a list of these animals will be sent to the producer asking them to send back information on the disposition of the remaining animals. These missing animals are added to the watch list until another disposition is recorded. Producer response is not mandatory for the program at this time. At the time the letter is sent to the producer, the reconciliation is considered complete by MDARD. This process is generally completed within 2 weeks of the whole herd test. In 2019, approximately 35 percent of producers responded to the request for more information. The MDARD employee performing the reconciliations estimated 40 percent of producers would respond. Animals that die on the farm are often not reported as dead, and therefore end up present on the watch list. Animals that producers retag before sending them to the livestock market will also end up on this watch list unless the producer calls the Atlanta office to notify them of the retag. The compliance unit keeps track of the watch list. They reported 1,328 RFID tags added to the watch list between August 2019 and July 2020. Previously infected premises under an *Agreement for Release of TB Quarantine and Procedures Required Following Release of Quarantine* are required to keep records of animal movements for the first two whole herd tests following release of quarantine. One of these herds, #68, had 82 animals added to the watch list during reconciliations for their first two whole herd tests. The owner did not

respond to the request sent to them to reconcile the missing animals. Herd #74 had two animals added to the watch list while they were under quarantine between two of the whole herd tests during their test and remove process. The producer would not disclose the location of the missing animals to the field veterinary medical officer performing the testing where those animals had gone. The herds which opted out of the EWB program, especially those with more than 25 head will create an additional challenge if the reconciliation process continues as it is currently being handled.

1. Herd Plans: In Article 4 of the MOU, there is a mutual agreement that rules and regulations of the National Bovine TB Eradication Program will be followed. VS Memo 552.47 and the 2005 UM&R indicate that an individual herd plan will be developed for TB-affected herds. For herds using a quarantine test-and-removal strategy, herd plans will include terms of quarantine, quarantine release, herd test frequencies, tests to be used, and any additional disease or herd management practices deemed necessary to mitigate disease spread within the herd, reinfection of the herd, and disease spread to wildlife in the area. The plan must be approved by the Chief State Animal Health Official and the Area Veterinarian in Charge and have the concurrence of the Designated TB Epidemiologist or Regional TB Epidemiologist.

MDARD Standard Operating Procedure (SOP) 3.07 “Response to Bovine TB Infected Herds” refers to herd plans and was last revised in March 2015. This SOP indicates data pertinent to the herd plan is gathered at various stages of the response. An initial herd visit to discuss quarantine, testing, and the epidemiologic investigation is performed. Next, data for the CEAH Test and Removal Model are gathered and USDA and MDARD discuss model results and present options for owner consideration, which may include USDA or MDARD-funded depopulation or test and removal strategy. If a test and removal strategy is chosen, MDARD staff prepare quarantine order outlining testing process and steps for quarantine removal. Next, a multi-disciplinary team (MDARD, VS and APHIS WS, Michigan State University Extension, and MDNR) conducts an epidemiological investigation that focuses on source and exposed herd tracing and other epi-linkages and potential routes of exposure from TB-infected wildlife. MDARD produces a final report of this investigation within 6 months of the visit that is used to develop the herd plan. Data from Wildlife Risk Management plan investigations are used as needed in developing the herd plan, which is not mentioned in this SOP. The owner reviews the herd plan and the plan is modified if necessary. USDA and MDARD review the herd plan, including concurrence by a National TB Epidemiologist. Once the final test, i.e., verification has been completed, owner compliance with the herd plan is verified by MDARD, the herd plan is signed by the owner and MDARD, and quarantine is released.

The review team conducted a cursory review of files in the Atlanta office for currently or previously TB-affected herds 64 through 79, including 3 feedlots (F4–F6). Excluding feedlots and herds 77–79, 8 of 13 (62 percent) had herd plans in the file. Of the eight with herd plans, all had quarantine orders and five (63 percent) had evidence of verification of compliance with herd plans. Of note, MDARD indicated each herd

has a corresponding set of files stored electronically therefore, herds with missing information in the paper files may have an electronic copy stored elsewhere.

Nine herds, one dairy and eight beef, were selected for additional subjective review of their herd plans. In general, the requisite herd plan components were present, albeit to a varying degree of completeness and specificity. However, the plan components were not contained in a single, readily accessible document as would be desirable; this is not specifically required in the 2005 UM&R or VS Memo 552.47. MDARD considers the document titled “Agreement for Release of Quarantine and Procedures Required Following Release of Quarantine” as the herd plan, per se. The herd plan for herds in the MAZ focuses primarily on what is needed to protect a herd from wildlife exposure, e.g., fencing to exclude wildlife from livestock feed storage areas.

Terms of quarantine were not typically found in the herd plan. However, details of the quarantine were outlined, albeit in generic terms, in the TB quarantine order. Terms of quarantine release were readily found in the herd plan and consisted primarily of recommendations to mitigate wildlife exposure, e.g., ensure proper maintenance of deer fencing and adherence to WRM or EWB plans and MAZ-specific requirements, e.g., official animal identification and ongoing TB assurance testing.

Herd plans had practices deemed necessary to mitigate reinfection of the herd and disease spread to wildlife in the area, both in general principles and location-specific recommendations in all herd plans. These recommendations were sometimes borne out of findings from the epidemiological investigation report, the primary purpose of which was to assess potential routes of infection from wildlife. The epidemiological investigation report was available for three herds, i.e., 64, 65, and 73. The routine practice of performing an investigation and generating a formal report was stopped after herd 65 due to a reduction in available TB staff. Investigations are not generally performed where there is known source of TB in the absence of a wildlife reservoir, e.g., a herd purchased infected animals from a TB-affected herd. However, investigations are still performed where a known wildlife reservoir for TB is present; MDARD will generate a report when helpful to inform recommendations for a specific situation, e.g., herd 73. The MDARD TB SOP 3.07 has not been updated to document this change in process. WRM and EWB-related documents may also inform recommendations. Herd plans had little specific information on disease or herd management practices deemed necessary to mitigate disease spread within the herd. This may be due to the somewhat similar characteristics of herds in the Michigan beef production system and lack of practical and effective herd-specific mitigations to recommend.

Herd test frequencies and tests used were reported in retrospect in most herd plans rather than a prospective testing plan with expected month and year of testing. MDARD SOP 3.07 provides the quarantine order will spell out testing process. However, quarantine orders do not generally contain the testing plan. MDARD provides owners with a document outlining expectations for TB-affected herds,

including tests to be used and testing frequency in general terms without specific dates, and discusses during the initial visit with the owner. CEAH Test and Removal model results were available for nearly all herds to guide testing plans; those without test and removal model results underwent partial or full depopulation. MDARD staff expressed some concern with timeliness of receiving model results. MDARDs TB SOP 3.03 indicates that the producer is presented with test and removal recommendations and must choose within 2 weeks of presentation whether to begin test and removal process or request State-funded depopulation.

## **Recommendations**

1. **\*High Priority\*** Require signed herd plans to be in place that outline expectations and ensure compliance with recommendations in advance of beginning a test and remove program.
2. **\*High Priority\*** Develop and implement a system for complete herd reconciliations that ensures all animals are accounted for in 98% of the MAZ herds.
3. **\*High Priority\*** Require herds undergoing annual whole herd testing to save tags from animals that die on the farm between tests and present these tags to the testing staff when they arrive for whole herd testing.
4. **\*High Priority\*** Require producers to keep records on animals they retag themselves including those going to the market. These records must be presented to the testing team at the time of the whole herd test.
5. **\*High Priority\*** Require mandatory reporting by owners when animals are found to be missing on herd reconciliations.
6. **\*High Priority\*** Follow up with owners of previously infected herds every 180 days to ensure they are complying with the agreement of the quarantine release. Producers should be held to the agreement they made by signing the document and the document should be updated if there is a change in the program such as the EWB.
7. **\*High Priority\*** Require signed herd plans to be in place that outline expectations and ensure compliance with recommendations in advance of beginning a test and remove program.
8. Review the MOU to confirm which information metrics should continue to be included in both semiannual and annual reports or if certain metrics should only be included annually and apply this to future MOU's.
9. Add new Presque Isle and Buffer County cattle surveillance reporting section into the semiannual and annual reports to capture surveillance data and activities required for these counties as part of the 2020 MOU.
10. Define language in the next MOU that allows for buffer zone whole herd testing to replace required circle testing in areas of geographic and temporal overlap. Additional circle testing should not be required in areas where sufficient buffer zone whole herd testing has been completed in the previous 6–12 months or is ongoing.

11. Consolidate all relevant documents containing components of the herd plan into a single document with supporting documents attached.
12. Ensure copies of all documents are in paper file if that is to be used as reference file.
13. **\*High Priority\***All of the 6 herds of 25 head or more that opted out of the EWB program should be monitored quarterly, four times per calendar year, for potential movement violations.

## II. Evaluate Michigan Department of Natural Resources compliance with Article 5 of the Memorandum of Understanding

### Findings and Observations

The MDNR did not conduct TB surveillance in free ranging deer from late March 2020 until September 2, 2020, due to closure of the MDNR Wildlife Disease Laboratory. The laboratory reopened on September 2, 2020. MDNR was unable to meet minimum testing requirement of 300 samples from free-ranging white-tailed deer in 3 of the 6 buffer counties in calendar year 2019: Cheboygan, Crawford, and Otsego. Further, MDNR personnel commented that they do not expect to meet minimum testing requirements in the same three buffer counties during the 2020 calendar year (CY) due to lack of hunter or producer participation in active and passive surveillance methods. The exact testing interval for sampling free ranging deer is not clearly defined as evidenced by the conflicting reports identified below in element b. For example, the reporting period in one report is by CY January 1-December 30, whereas the MDNR website reports by hunting season which may extend into January or March of the next calendar year.

- a. The MOU describes the required active surveillance for bovine TB in free-ranging white-tailed deer. MDNR committed to testing 2,800 samples in the MAZ, 300 samples per county in the buffer counties of Cheboygan, Crawford, Iosco, Ogemaw, Otsego, and Roscommon, and 500 samples in Presque Isle County.
  1. Active sampling for 2,800 free ranging deer in the MAZ was accomplished in CY 2019 consistent with the requirements of the MOU. Active sampling in CY 2020 is suspended at this time. The graph below summarizes the testing for CY 2019 and 2020 at the time of the review:

	CY 2019	Pos.(+)	CY 2020	Pos.(+)
Alcona	813	14	14	0
Alpena	1035	9	65	0
Montmorency	558	5	6	0
Oscoda	457	3	2	0

2. Active sampling of free-ranging deer at a rate of 300 deer annually per county in the buffer area was not accomplished in all counties in CY 2019. E-mail communication from MDNR to MDARD dated December 30, 2019, indicates the sample numbers in the buffer counties listed in the chart below. The MDNR website indicates different



numbers for the “2019 White-tailed Deer TB testing as of March 16, 2020.” [MDNR surveillance](#). The graph below summarizes the testing for CY 2019 and 2020 at the time of the review:

County	E-mail 12-30-2019	MDNR website	E-mail 08-07-2020
Cheboygan	142	154	0
Crawford	187	202	0
Iosco	269	307	0
Ogemaw	335	364	0
Otsego	163	167	0
Roscommon	363	391	1

The requirement to test 300 cattle herds in each of the buffer counties was included in both the April 2019 MOU and the December 2019 MOU. Based on the results of the 2019 and 2020 free-ranging deer surveillance to date, MDARD is required to complete whole herd testing of all cattle herds over a 3-year period on a rotating basis in Cheboygan, Crawford, and Otsego.

Based on the data provided to the review team, updated on September 10, 2020, MDARD has scheduled 7 herds and completed 9 herd tests in Cheboygan County, scheduled 0 herds and completed 1 herd test in Crawford County, and scheduled 11 herds and completed 5 herd tests in Otsego County.

County	Projected cattle herd number	Herd test scheduled	Herd test complete
Cheboygan	108	7	9
Crawford	11	0	1
Otsego	66	11	5

- It is unclear if active sampling of free-ranging deer in Presque Isle County at a rate of at least 500 deer annually with a goal of testing 700 deer annually has occurred. E-mail communication from MDNR to MDARD on December 30, 2019, indicates 497 samples were tested with no positive cases. The MDNR website indicates 538 samples for the “2019 White-tailed Deer TB testing as of March 16, 2020.” [MDNR Surveillance](#)

Surveillance for CY 2020 in Presque Isle County at the time of the review is 10 samples.

County	E-mail 12-30-2019	MDNR website	E-mail 08-07-2020
Presque Isle	497	538	10

- b. The wildlife disease laboratory had been closed from mid-March until September 2 therefore passive surveillance was not occurring during that time. There were no disease control permit head collections from mid-March through mid-July. One MDNR resource was recently approved to begin prioritizing on-farm head pickup. Permittees were asked to keep deer heads frozen until MDNR collection resumed. MDNR employees continue to be under stay at home order and are considered non-essential employees in response to the COVID-19 pandemic that began in March 2020 and continued through the time of this report.
- c. MDNR employees were classified as non-essential during COVID-19 restrictions and the Wildlife Disease laboratory was non-operational for several months. According to the MOU, when TB is detected in livestock outside the MAZ and buffer counties, or in free-ranging deer, MDNR will heighten surveillance. MDNR was unable to heighten active surveillance in free-ranging deer as described in the MOU.
- d. MDNR has a full time-bovine TB coordinator. Since March 2020, this employee has only attended one public meeting (August 26, 2020) for onsite meetings with hunt club, landowners, and cooperators as a result of the COVID-19 pandemic. This meeting was to discuss deer management cooperatives to increase the harvest of antlerless deer in the MAZ. MDNR has not been able to hold herd and hunter meetings. MDNR has been unable to hold public educational events to promote success of a local wildlife cooperative in Montmorency County.
- e. The feeding and baiting ban is in place; however, MDNR cannot assign conservation officers to enforce the ban due to the State imposed work from home order and MDNR employees not considered essential.
- f. MDNR has provided approval to APHIS WS for targeted deer removal in the MAZ and Presque Isle County.
- g. MDNR has developed an on-line permitting process for cattle producers and adjacent landowners to acquire no cost disease control permits in the MAZ and Presque Isle County.
- h. The MDNR is involved in several research projects related to TB surveillance in free ranging white-tailed deer. These include a) a collaborative project with University of Wisconsin-Madison/ United States Geological Survey to develop a new metric of TB transmission, directly modelled force of infection and b) joint Michigan State University/APHIS/MDNR research projects surrounding Bacillus Calmette–Guérin field trial in Michigan deer.

### **Recommendations**

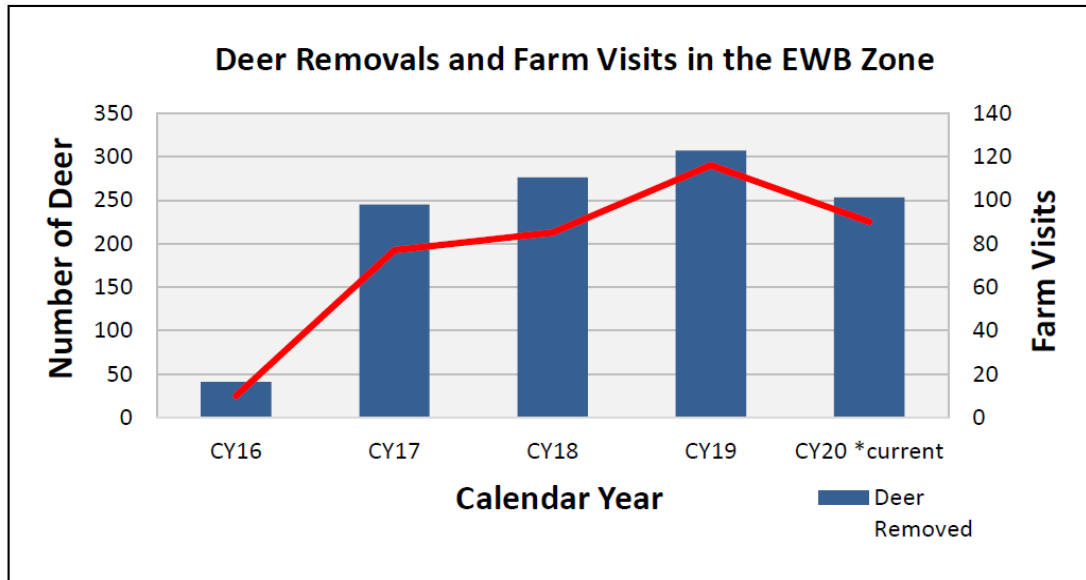
1. **\*High Priority\*** Complete cattle testing in one third of the herds per the requirements of the MOU in Cheboygan, Crawford, and Otsego County by the end of calendar year 2020 and ongoing years.
2. **\*High Priority\*** Initiate surveillance in free-ranging white-tailed deer per the requirements of the MOU in Cheboygan, Crawford, and Otsego County.

3. Define the specific MDNR testing interval for free ranging white-tailed deer using 365 day, 12 month, or calendar dates. This recommendation is based on discrepancies noted in section II, in 2 and 3 of the findings above.
4. Notate the start date of the 3-year test cycle for each free-ranging white-tailed deer circle test area in the annual report.
5. MDNR should collaborate with MDARD and APHIS WS to facilitate increased public education and outreach.

### **III. Evaluate Service Responsibilities**

#### **Findings and Observations**

- a. VS personnel are providing on-site epidemiologic support for trace investigations
- b. VS personnel facilitate and process indemnity payments for diagnostic exposed, suspects, and reactor animals according to Agency standards and standard operating procedures.
- c. All Presque Isle County herds are having their wildlife risk plans re-evaluated by APHIS WS personnel this summer and are being offered targeted deer removal during these visits. Forward Looking Infra-red (FLIR) surveillance is occurring in Presque Isle County and non-EWB high-risk areas as time allows.
- d. APHIS WS has participated in MDARD programs for over 15 years. These programs include development of targeted deer removal (TDR) and the voluntary TDR programs in the five county area. Since APHIS WS is a non-regulatory Agency, they must acquire producer permission to access private property. The targeted deer removal program conducted by APHIS WS includes multiple activities observed by the review team including: 1) maintaining an APHIS WS form 12a work order signed by the owner on each farm, 2) nocturnal deer monitoring using FLIR surveys 3) monitoring all the farms enrolled in the EWB program 12 times/year to identify farms with highest risk of transmission from deer to cattle based on location of deer or increased deer activity 4) deer removal and 5) ArcGIS mapping. The chart below depicts the trend in APHIS WS farm visits and targeted deer removal.



APHIS WS is in the process of developing new data management and collection methodologies to help evaluate the TDR programs. In 2019-20, APHIS WS experimented with the Survey 123 and Collector Apps in Presque Isle County and started using it in the EWB area to assist with program evaluations. This software is capable of plotting deer observations and removals on aerial maps along with other attributes from GIS data. APHIS WS personnel have been able to use this imagery as a demonstration tool for producers/Agency representatives on deer observations/behavior.

- e. VS personnel conduct whole herd testing in the MAZ as well as support the implementation of the WRM program.
- f. APHIS continues to support the WRM Program. APHIS supplies personnel to coordinate and perform inspections. APHIS also reviews and documents compliance issues with the WRM program.

**Recommendations:**

- 1. **\*High Priority\*** VS-Michigan should confirm that signed herd plans are in place that outline expectations and ensure compliance with recommendations in advance of beginning a test and remove program for each herd.
- 2. **\*High Priority\*** VS-Michigan should monitor and confirm MDARD is performing whole herd tests in one-third of the herds in Cheboygan, Crawford, and Otsego County by the end of calendar year 2020 and ongoing years.

**IV. Evaluate progress on recommendations from the 2019 review and risk assessment.**

**Findings and Observations**

- 1. Recommendation 1 - Maintain the current level of wildlife testing surveillance has been hampered by the COVID-19 restrictions imposed by the State as well as the TB zoonosis impacts in laboratory employees and subsequent investigation. The laboratory closed

from March 2020 to September 2020 so testing of wildlife was suspended. The laboratory was opened again shortly after the review; however, Michigan will be hard pressed to accomplish this expectation as planned.

2. Recommendation 2 -to include Presque Isle County under similar or same requirements as the MAZ appear to have been implemented (either in whole or in stages) which should be completed by July 1, 2021. All herds in Presque Isle County have been whole herd tested.
3. Recommendation 3 - Interagency cooperation/collaboration appears to be ongoing and working well. The MDARD, MDNR, VS, and APHIS WS are working well together and making progress in risk mitigation and producer/public education and outreach efforts. MDNR has been unable to conduct public meetings since mid-March 2020.
4. Recommendation 4 - Interagency coordination to allocate resources and funds appears to be progressing well. The MDARD, MDNR, APHIS, and APHIS WS are all working together toward their common goals.
5. Recommendation number 5 - Michigan supporting existing positions and assignments was completed. MDARD hired an additional TB testing veterinarian in the spring of 2020 who is based in the MAZ area. MDARD is in the process of hiring one additional laborer for the TB area. The Michigan VS office is in the process of hiring an animal health technician for the MAZ as well.
6. Recommendation 6, 18 and 19 – MDARD is making a large long-term investment in a cloud-hosting project that will enhance the capabilities of multiple databases used in the Michigan TB program. These investments appear to be an effort to consolidate the current number of databases being utilized and increase overall future database capacity and efficiency. Changes meet or exceed 2019 recommendations.
7. Recommendation 7 – MDARD has expanded use of the Fast Auction software system into several AFZ livestock markets owned by United Producers Inc. They are also in discussions to incorporate RFID read data into sales records at these markets to improve traceability. Changes meet or exceed 2019 recommendations.
8. Recommendation 8 - Ongoing training for WRM verification has been implemented.
9. Recommendation 9 regarding MDARD and APHIS management staff meeting at the Atlanta field office has been implemented and some improvements made. Due to the COVID-19 impacts, these in-person meetings were curtailed temporarily. Field staff suggested that Lansing, Michigan staff attending more Atlanta staff meetings would help facilitate better communications and more consistent application of regulations and a better understanding of the field staff needs and ideas. Management should gain field staff input and perspective as programs are being developed and before they are implemented.
10. Recommendation 11 - the expansion of MDARD agreement with APHIS WS for deer removal has been implemented at least in part as resources allow. APHIS WS is a vital component of the Michigan TB program and should be utilized to the greatest extent practical not only in deer removal efforts, in producer/public education and outreach, and

in the EWB/WRM verification efforts. APHIS should allow and encourage this involvement.

11. Recommendation 12 - maintaining the original timeline on implementation of the EWB program was waived. The EWB implementation was extended into spring 2020. The EWB is now fully implemented.
12. Recommendation 13 - evaluation of the EWB was not completed. MDARD has indicated data being gathered at this time will be beneficial in the future for risk-based resource allocation.
13. Recommendation 14, 15, 16 – Three specific recommendations were made regarding VS 6-38 and annual reporting requirements in 2019. Each of these recommendations was addressed in the FY 2019 annual TB report prior to signing the most recent 2019 MOU.
14. Recommendation 17 – database investments will allow for more efficient permitting validation and utilization of electronic certificates of veterinary inspection for improved traceability. MDARD offers training in use of wands and personal digital assistants to accredited veterinarians with a goal to increase their utilization for TB testing and decrease workload and error rate associated with handwritten test charts. MDARD is participating in Animal Health Services’ pilot project with animal disease traceability staff to evaluate new mobile information management platform.

Changes meet or exceed 2019 recommendations.

15. Recommendation 20 – MDARD does not have legal authority to require herd owners to report new herd.

### **Recommendations**

1. Recommend that APHIS WS personnel participate in an expanded role in the WRM and EWB verification activities due to their expertise in wildlife control efforts.
2. Recommend MDARD conduct an immediate evaluation of the EWB to determine if more cost-effective biosecurity methods can be implemented to separate deer from domestic livestock. If not, consider discontinuing the EWB and reallocating funding to higher value activities.

## **V. Evaluate producer education and compliance within EWB area**

### **Findings and Observations**

1. Interviews with producers indicated that there is still some confusion about what the WRM program is and the differences from the EWB program. Producers associated the EWB program with the two primary EWB related activities – high fencing and targeted deer removal. One owner indicated that the program has changed their way of thinking about risk factors such as the impact of apple trees as a deer attractant.
2. Producers who were interviewed seemed to believe that high fencing and targeted deer removal were making a difference. Producers are sensitive to competing interests to controlling the deer population and mentioned losing the ability to rent land because of using deer population control strategies. One producer stated that the fence gives him “a piece of mind” that they were doing something proactive. One producer indicated fencing on the property was in response to multiple farms in close proximity that had TB. Several

producers specifically stated appreciation for the work being done by APHIS WS personnel and the relationships that they were developing. One producer mentioned that some “USDA” recommendations, e.g., feeding for 24-hour period and preventing grazing near forest, were not realistic or feasible due to their production system.

3. On the dairy operations, ID compliance appeared to approach 100 percent but was difficult to evaluate on the beef premises due to proximity of the animals at site visits. Owners were aware of ID requirements. One owner purchased 1,000 serially numbered ID tags at a time to help reduce errors in traceability.
4. Owners generally felt standards were applied fairly but several questioned what the criteria were and need for fencing on some neighboring properties. They did not appear to understand that infrastructure changes were based on individual evaluations of risk factors specific to each property requesting mitigation under the EWB. One owner mentioned there were differences in uptake and conformity to program standards. One owner was concerned with lack of transparency on TB-affected herds and specific locations of TB positive deer so that landowners and crop harvesters might employ risk management strategies. One owner mentioned economic impact of cattle prices because of movement restrictions identifying animals coming from MAZ and expressed an intent to change their livestock operation to more of a freezer beef model.

### **Recommendations**

1. Continue and enhance the education and outreach efforts towards producer and sportsman groups.

## Conclusion

Michigan has a 25-year history of bovine TB in a wildlife reservoir and a 21-year history of bovine TB in domestic livestock. Free-ranging white-tailed deer as a reservoir have sustained TB at a prevalence of 2 percent. Hunter and hunter harvest numbers are in decline.

The December 2019 MOU describes the responsibilities of all parties of the agreement and was the focus of the review. The MOU establishes an agreement of the requirements for split State status regarding the risk of bovine TB, namely, MA status and AF status pursuant to 9 CFR 77, and the TB UM&R, effective January 1, 2005. It outlines an agreed upon framework for implementing and assessing strategies to address bovine TB in both livestock and wildlife in Michigan with the objective of achieving AF status. This MOU is effective for 2 years following the date of signature, unless additional TB-affected cattle herds are detected in the AF zone (except cases detected in Presque Isle County). Two infected herds have been identified in the AF zone since the origination of the December 2019 MOU.

This program review was conducted to meet the requirement for an annual program review in States that are granted split State status for bovine TB in cattle and bison, as stated in 9 CFR 77.4. The review team observed that Michigan is meeting the intent of the December 2019 MOU with few exceptions detailed in this report. The review report provides detailed recommendations for improvement for each of the factors evaluated during the review. This includes recommendations related to several overarching areas that affect multiple evaluation factors.

Three specific areas where improvement is needed were identified during the review and discussed during the exit interview held at the conclusion of the review. These included:

- Herd inventory reconciliations for herds in the MAZ, although completed within described timelines, were incomplete and do not account for missing animals. This activity is critical to evaluate the effectiveness of existing movement controls associated with the MAZ.
- Herd plans were not developed until after the test and remove phase was complete.
- MDNR did not complete the required free-ranging deer surveillance in all six-buffer counties. This shortcoming will require MDARD to conduct TB testing of all cattle herds in at least three buffer counties.



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