FRUIT·A·SYST

FOR MICHIGAN PRODUCERS

FAS 104 · October 2018

Fruit•A•Syst assesses risks in the field or orchard to groundwater and surface water. It addresses nutrient, erosion, pest, irrigation and other management practices. It also identifies Right to Farm and environmental compliance issues. This assessment shows what is needed for Michigan Agriculture Environmental Assurance Program (MAEAP) Cropping System verification.

For MAEAP Verification:
Contact the MAEAP Office at the Michigan Department of Agriculture & Rural Development

(517) 284-5609

MAEAP

MICHIGAN STATE UNIVERSITY | Extension

Fruit◆A◆Syst

Cropping System Improvement Action Plan

Risk question	List high-risk practice(s) from Fruit◆A◆Syst as well as medium-risk practices that do not meet MAEAP requirements.	Required for MAEAP verification?	Alternative low-risk practice (include potential sources of technical and financial assistance).	Action plan	
				Planned completion date	Indicate date when completed
3.14	(Example) Pesticide spill clean-up kit not available in the orchard.	Yes	Acquire pesticide spill clean-up kit from water stewardship technician for pesticide application area.	March, 2018	**(√)** Completed March 1, 2018

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Fruit◆A◆Syst

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Fruit◆A◆Syst

Cropping System Improvement Action Plan (continued)

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I understand that this cropping system assessment and corresponding Cropping System Improvement Action Plan were developed on the basis that I have disclosed, to the best of my knowledge, all information pertaining to my cropping operations.

Farmstead address:

Street_____

City_____MI, Zip code_____

Watershed name:_____

Producer's signature_____Date_____

Fruit◆A◆Syst conducted by:

Name_____Title_____

Organization_____Date_____

MAEAP Verification Action Plan	Date
Target date for MAEAP verification of **Cropping System**	
Target date for MAEAP verification of **Farmstead System**	
Target date for MAEAP verification of **Livestock System**	
Target date for MAEAP verification of **Forest, Wetlands, & Habitat System**	

For MAEAP Verification - Contact MAEAP Office at the Michigan Department of Agriculture and Rural Development: 517-284-5609

Introduction

Fruit◆A◆Syst will assist growers in developing and implementing a management plan and site improvements that prevent contamination of groundwater and surface water and maintain economic crop production. Plans will be consistent with the Michigan Right to Farm identified current Generally Accepted Agricultural and Management Practices (GAAMPs) as well as applicable state and federal environmental regulations.

Nutrients used in fruit production come from chemical fertilizers and naturally occurring sources such as manure, legumes and biosolids (sewage sludge). Synthetic or naturally occurring nutrients can become mixed with surface water or groundwater by natural processes such as runoff and leaching. Nitrate contamination of groundwater and phosphorus contamination of surface water are problems in some areas of Michigan. Fruit◆A◆Syst will assess current nutrient management practices and identify alternative management practices to reduce nutrient losses to the environment.

Virtually all crops produced in Michigan may be threatened by serious pest problems – disease-producing organisms, insects and weeds. Producers are encouraged to adopt pest management practices that achieve the desired crop quality and yield while minimizing any adverse effects on non-target organisms, humans, and soil and water resources. Fruit◆A◆Syst will assess current pest management practices and identify alternative management strategies to reduce negative impacts to the environment.

The Michigan Agriculture Environmental Assurance Program (MAEAP) is a comprehensive, proactive and voluntary agricultural pollution prevention program.

Producers who complete Fruit◆A◆Syst will be able to determine what structural, management practices or record-keeping changes (if any) that will be needed for their businesses to be environmentally assured through MAEAP. After addressing the risks indicated by the Cropping System Improvement Action Plan, the producer can contact the Michigan Department of Agriculture and Rural Development (MDARD) to request Cropping System verification at (517) 284-5609. An MDARD verifier will schedule a site inspection.

P.A. 451, Part 82, ensures the confidentiality of the producer information provided to the MDARD for verification. Any information connected with the development, implementation or verification of a conservation plan or conservation practice is confidential.

The owner of a MAEAP verified Cropping System will be eligible for various incentives and can enjoy the peace of mind that comes with knowing that Cropping System practices are consistent with the identified current Right to Farm GAAMPs. Verified Cropping Systems are positioned to achieve regulatory compliance with state and federal environmental laws.

For a list of currently available incentives and information on how to get started, contact a local conservation district, MSU Extension or Natural Resources Conservation Services (NRCS) representative.

The Michigan Right to Farm Act authorizes the Michigan Commission of Agriculture and Rural Development to develop and adopt GAAMPs for farms and farm operations in Michigan. These voluntary practices are based on available technology and scientific research to promote sound environmental stewardship. The current Right to Farm GAAMPs are posted on the Michigan Department of Agriculture and Rural Development Web site: **www.michigan.gov/mdard**.

What is the Crop Assessment System for Fruit Producers?

The Crop◆A◆Syst for Fruit Producers (Fruit◆A◆Syst) is a series of risk questions that will help assess how effectively a producer's crop management practices protect groundwater and surface water resources. The risk questions are grouped in the following sections:

Cover Photos: Mirjana Bulatovic-Danilovich, Rufus Isaacs and Mark Longstroth.

	Cropping System Improvement Action Plan
1	Nutrient Management Practices
2	Soil and Water Conservation Practices
3	Pest Management Practices
4	Water Use
5	Irrigation Management Practices
6	Other Environmental Risks in the Cropping System

The answers to the risk questions indicate whether current management practices have a low, medium, or high risk of contamination. Growers are generally recommended to adopt the low-risk management practice. MAEAP local conservation district technicians or horticultural advisors can assist to make the appropriate management changes.

Responses to risk questions that address management practices that are regulated by state or federal law indicate **illegal practices with black bold print**. The numbered footnotes will indicate which regulation is violated (refer to Table 2, back cover).

Responses to risk questions that address management practices covered by the GAAMPs indicate a management practice consistent with a specific GAAMPs with ***blue bold italic print***.

A bold box indicates the management level(s) required for MAEAP verification.

MAEAP management requirements are aligned with state and federal environmental regulations. The GAAMPs and environmentally based horticultural management practices are supported by research. The records and/or evidence that indicate the approved management practices have been implemented on the farm are listed in the far right column. This evidence will provide the basis for awarding environmental assurance through MAEAP.

How Does Crop◆A◆Syst Work?

1) Select all relevant risk question sections for the fruit operation.

2) Answer the risk questions by selecting the answer that best describes management practices used on the operation. Indicate the risk level in the column to the right. Skip any questions that don't apply to the Cropping System.

Note: for MAEAP verification, complete the risk questions with a Fruit◆A◆Syst trained individual. Locate a local MAEAP conservation district technician through the county conservation district, MSU Extension, or NRCS office, or at **www.maeap.org**.

3) After completing each section of risk questions, list the practices that present a high risk of contaminating groundwater and surface water resources in the Cropping System Improvement Action Plan (printed inside the front cover of the bulletin). Also include any medium-risk practices that do not meet MAEAP verification requirements.

4) In the Cropping System Improvement Action Plan, list:

- Management practices or site improvements to be implemented that will reduce the identified risk.
- Sources of technical and financial assistance.
- Target dates for accomplishing the changes.
- Target date for MAEAP Cropping System verification.

A Few Final Words

The key to Fruit◆A◆Syst is that, once environmental risks to groundwater and surface water resources are identified, the plan is implemented to reduce the risks. Some of the stewardship practices that will reduce risks may cost very little and take very little time to implement. Other practices may involve additional cost and may not be implemented for a few years. It is important, however, to have a plan to follow. Once the plan is developed and changes are implemented to address the risks, the farm is ready for MAEAP Cropping System verification.

NUTRIENT MANAGEMENT PRACTICES

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.00) Has there ever been a formal Right to Farm complaint against the farm?	There has never been a Right to Farm complaint, or the concern was not verified, or the concern was resolved.		There was a formal Right to Farm complaint and the concern has not resolved.	Producer's verbal indication of complaint history.	
1.01) How often are fields tested for nutrient levels (P, K, Ca, Mg) and pH?	***All fields*** are ***sampled and tested*** (both tissue and soil) ***on a regular basis,*** at least every 4 years.	***All fields*** are ***sampled and tested*** (either tissue or soil) every 4 years or producer plans to bring tests up to date.	Fields have not been soil or tissue tested within the past 4 years.	Field names or map. Acres in the cropped portions of the field. Up-to-date soil test and tissue analysis reports, or schedule to bring all tests up to date.	
1.02) Do soil sampling procedures adequately represent field conditions?	One composite sample is taken from uniform field areas of less than 40 acres. For tree fruit, samples are taken from under trees (weed sprayed, cultivated or mulched areas).		One composite sample taken from areas greater than 40 acres.		
1.03) Is the soil pH maintained in the desirable range for the crop(s) being grown?	The pH is adjusted to desirable range before planting and maintained for current crop.	Soil pH is maintained and/or adjusted for current crop on the basis of soil analysis after planting.	Soil pH is not maintained in the desirable range.		
1.04) How are all sources of nutrients considered when making fertilization decisions?	***Credit taken for nutrients supplied by organic matter, legumes and manure or other biological materials*** (biosolids). Fertilizer rates are reduced accordingly.	When organic matter, legumes, manure or other biological materials (biosolids) are used, fertilizer rates are sometimes reduced.	When organic matter, legumes, manure or other biological materials (biosolids) are used, rates are not reduced.	Written records available, showing nutrient credits utilized.	

A boxed risk level indicates the level required for environmental assurance verification.
Bold Black print indicates a violation of state or federal regulation.
Bold blue italic print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural Management Practices (GAAMPs).

NUTRIENT MANAGEMENT PRACTICES (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK - 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
1.05) How are fertilizer application rates determined?	***Consistent with Michigan State University*** (MSU) ***recommendations.*** When MSU recommendations are not available, other land-grant university recommendations developed for the region may be used. (Based on site-specific, block-by-block soil and tissue analysis.)	***Consistent with Michigan State University (MSU) recommendations,*** based on composite analysis representing the whole farm.	Fertilizer rates are not based on tissue or soil analysis.	Applications consistent with MSU recommendations (MSU soil test printout or calculated MSU recommendations on file). When MSU recommendations are not available, applications are consistent with industry standards.	
1.06) How are nutrient management plans for each field annually developed and followed?	Annual nutrient plan is developed on a block-by-block basis to meet crop nutrient needs and minimize loss of nutrients to the environment.	A nutrient plan is developed each year for each crop species. Soil or tissue tests are up-to-date.	Nutrient plan is not developed, or the same plan is used for more than four years.	Annual nutrient plan by field or crop grown.	
1.07) Is fertilizer application equipment checked for proper adjustment?	***Application equipment is checked for rate of application and placement.*** Over- and under-applications are monitored and corrected.		Application equipment is not checked.	Name of person responsible for fertilizer applicator adjustments and the dates of adjustments.	

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.08) What soil nutrient management records are kept?	***Records of soil tests and tissue analysis reports and quantities of nutrients applied to individual fields*** or blocks ***are maintained.***	Partial nutrient management records are kept. Complete nutrient management records will be kept in the future, for review at time of reverification.	Minimal or no nutrient management records kept.	Three years of records – or five years, if applying manure, - or plans to begin keeping records. - Soil fertility tests and/or plant analysis results. - Previous crop grown and yield harvested. - Date(s) of nutrient application(s). - Nutrient composition of fertilizer or other material used. - Amount of nutrient-supplying material applied per acre. - Method of application and placement of applied nutrients. - The name of the individual responsible for fertilizer applicator. calibrating and the dates of calibration. - Vegetative growth and cropping history of perennial crops.	
1.09) When not in use, where are loaded planting and spray supply vehicles (trailers and trucks) parked to protect water resources from accidental fertilizer and pesticide spills and mischievous activities?	Supply vehicle is returned to a secure location when not in use. Fertilizer and pesticides are properly stored more than 150 feet down gradient from any well.		Fertilizer and pesticide (including treated seed) supply vehicle is left in an unsecured location. Or, Fertilizer and pesticides are **stored less than 150 feet from any well.**[1]	Map showing where vehicle(s) should not be parked adjacent to any well. No evidence vehicles left in an unsecured location.	

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.10) Are poly tanks used as intended?	Yes, Vertical (upright) tanks are used for stationary fertilizer storage, and horizontal tanks with tie-down features are used for stationary storage and/or transportation application.		Vertical tanks are used as mobile nurse tanks or other transportation applications. Vertical tanks are designed for stationary storage.		
1.11) Are poly tanks inspected periodically for structural soundness?	Poly tanks are inspected for crazing (spider webbing) and cracking in the spring and again at the end of the season. Damaged tanks are replaced or used for water.	Poly tanks are inspected and periodically replaced as necessary	Tanks are not inspected regularly. High potential for tank failure is present.		
1.12) How are Nitrogen (N) fertilizer applications matched to the demand of the crop and the conditions of the soil?	N rates are based on tree/plant vigor, production quality, pruning practices and periodic tissue analysis, and do not exceed MSU recommendations.	N rates are based on previous practices that match inputs with plant needs, but sometimes exceed MSU recommendations.	N rates are not based on nitrogen monitoring or plant assessment and often exceed MSU recommendations.		
1.13) How are commercial Phosphorus (P) fertilization rates determined?	***Based on soil tests or plant tissue analysis using MSU recommended rates.*** If soil test exceeds 150 ppm Bray P1 (300 lb/A), P is discontinued.		P is applied without regard to soil or tissue analysis.	Commercial P management consistent with Nutrient GAAMPs.	
1.14) How often is commercial Phosphorus (P) fertilizer applied on frozen or snow-covered fields?	P fertilizer is never broadcast on frozen or snow-covered fields.	***Broadcast applications are avoided on frozen or snow-covered fields*** and are not part of the nutrient management plan.	P fertilizer is often broadcast on frozen or snow-covered fields.	Date(s) of application(s) of P fertilizers.	

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF MANURE IS NOT USED, SKIP THIS SECTION.)					
1.15) What manure management records are maintained?	Complete application ***records of manure analysis, soil test results and rates of manure application for individual fields are maintained.***	A minimum of one season of manure application records, or partial application records have been kept. Complete manure application records will be kept immediately and will be available for review at the time of reverification.	Minimal or no records are maintained.	Additional nutrient management records that are needed if manure is used in the cropping system: - Dates(s) of manure application and incorporation, when applicable - Rate of manure application - Weather conditions during application of manure - Field conditions during application of manure - Manure/wastewater quantities produced and nutrient analysis results - Records of rental or other agreements for application of manure/wastewater on land not owned by the producer - Records of manure/wastewater sold or given away to other landowners	
1.16) How is the nutrient content of manure determined?	***Laboratory analysis for percent dry matter (solids), ammonium N, and total N, P and K.***	Book values or standard nutrient content values used.	Manure nutrient content is unknown or not considered.	All manure analysis or book values on file.	
1.17) How are desired manure application rates achieved?	Manure analysis (book value, manure test or mass balance) and ***field application rates are known.***		Manure application rate is not known.	Rate of manure applied known for all spreaders. Records indicate date of calibration.	

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF MANURE IS NOT USED, SKIP THIS SECTION.)					
1.18) How is manure, and/or compost, generally applied to fields?	***Manure, and/or compost, is incorporated within 48 hours or injected into the soil, and/or conservation practices*** (residue management, perennial crops, cover crops, etc.) ***are used to protect against runoff and erosion losses to surface waters.***	Manure, and/or compost, is generally surface applied and conservation practices are employed to reduce the risk of runoff.	Manure, and/or compost, is applied in a manner that results in ponding, soil erosion losses, or manure runoff to adjacent property, drainage ditches or **discharge directly to surface water.**[4]	Manure, and/or compost, application records.	
1.19) How are streams, wetlands, farm ditches and other water bodies protected from manure runoff?	***Manure is incorporated within 48 hours or injected. Or, surface applications are not done within 150 feet of surface water.*** Or, filter strips, riparian buffer strips, and other conservation practices are maintained between fields and surface waters on the farm and around surface water inlets.	Conservation practices are maintained on some fields.	Manure is applied within 150 feet of surface waters and not incorporated without conservation practices. And/or manure occasionally reaches neighbor's property.	Field maps with setbacks identified. Records of manure incorporation.	
1.20) How are manure Nitrogen (N) application rates managed?	***Manure and N fertilizer are applied at rates that do not exceed the N requirements of the crop*** and are credited toward fertilizer needs.	Manure N credits are considered but not to their full extent.	Commercial N is not reduced to account for manure nitrogen credits.	Manure rates do not exceed crop N needs, consistent with GAAMPs.	
1.21) How are manure Phosphorus (P) application rates managed?	***High testing fields (>150 ppm Bray P1) do not receive manure, and fields between 75 and 150 ppm P receive no more than four years, crop P removal, if one-year application is impractical.***	High testing fields (>150 ppm Bray P1) removed from spreading plan, but crop removal rates are not followed.	Manure application rates are not based on soil tests and/or crop removal rates.	Manure rates do not exceed crop P needs. If developing a Crop Nutrient Management Plan (CNMP), refer to USDA-NRCS 590 Standard.	
1.22) How is manure, and/or compost, temporarily stockpiled in relation to surface water?	***Manure stockpiles are kept at least 150 feet from surface waters or areas subject to flooding unless conservation practices are used to protect against runoff and erosion losses to surface waters.***		Manure stockpiles closer than 150 feet to surface waters or areas subject to flooding, and conservation practices are not used to protect against **runoff and erosion losses to surface waters.**[4]	Appropriate temporary manure stockpiling management demonstrated.	

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF MANURE IS NOT USED, SKIP THIS SECTION.)					
1.23) In the field, what management practices are used to reduce odors and pests from manure temporarily stockpiled?	***Stockpiled manure is at least 150 feet away from non-farm homes and stockpiled manure is covered with a tarp, straw, woodchips or other materials or additives are used to reduce odors and pests.***	***Stockpiled manure is at least 150 feet away from non-farm homes.***	Stockpiled manure is closer than 150 feet to non-farm homes.	Appropriate temporary manure stacking management demonstrated.	
1.24) How long is manure stockpiled in the field?	***Manure is spread as soon as field and weather conditions allow, and does not exceed six months; or twelve months if covered with an impermeable cover.***		Manure stockpiled for more than six months without a cover, or more than twelve months with an impermeable cover.	Appropriate temporary stockpiling management demonstrated.	
1.25) How are fields selected for spreading on frozen and snow-covered ground?	No applications on frozen or snow-covered ground without injection or incorporation.	Manure application risks index (MARI) has been completed for each field receiving manure on frozen or snow-covered ground. Frozen or snow-covered fields receiving manure have met MARI criteria for Low or Very Low rating and ***no liquid manure is applied on slopes greater than 3%, and no solid manure is applied to slopes over 6%.***	Applications are made to fields where runoff to water resources may occur.	MARI completed for each field receiving winter manure application, or spreading plan does not include winter spreading.	
1.26) How are field tiles managed to prevent manure discharge to surface water?	***Liquid manure is prevented from reaching tile lines.*** Management practices are in place to prevent runoff to surface inlets. Tile line outlets are monitored.		Tile outlets are not monitored for manure discharge.	Tiled fields identified on map. Records of tile flow before and after application (flow, rate, color and odor).	

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF MANURE IS NOT USED, SKIP THIS SECTION.)					
1.27) How are manure applications managed to prevent any food safety risk(s)?	Manure application records document manure is incorporated and applied 270 or more days prior to harvest.	Manure application records document manure is incorporated and applied 120 or more days prior to harvest.	Manure is applied less than 120 days prior to harvest.	Note: USDA Good Agricultural Practices ≥120 days before harvest. The Food Safety Modernization Act currently recommends using the National Organic Program guidelines for raw manure pre-harvest application interval.	
1.28) How are biosolids with pathogens prevented from contacting crops grown for human consumption?	Biosolids are not used on crops grown for human consumption or biosolids with pathogens present (Class B biosolids) are applied only to non-bearing trees and plant areas, or harvest restrictions are followed. (Class A biosolids are essentially pathogens free with no restrictions for land application. Class B biosolids have low levels of pathogens and have restrictions and harvest intervals when land applied.)		**Biosolids with pathogens present (Class B biosolids) are applied to active fruit production areas without regard to harvest restrictions.**[4]	Application records kept for Biosolids applications and can be compared with fruit production records.	
1.29) Has nutrient content information on the biosolids applied to the farm been received?	Received laboratory analysis for percent dry matter (solids), ammonium N (NH4-N), and total N, P and K, and utilize nutrient credits when planning nutrient program.		Have not received any biosolids analysis information.	Biosolids analyses on file.	
1.30) How are the rates of biosolids (in gallons or dry tons per acre) and applied biosolids nutrients known?	Received actual biosolids application rates from the biosolids generator or its land application contractor. Nutrient rates are consistent with MSU recommendations.		Have not received any biosolids rate or nutrient application information.	Biosolids application rates on file.	

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Soil and Water Conservation Practices

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
2.01) Have environmentally sensitive areas been identified (land near surface water, highly erodible soils, soils with high leaching or runoff potentials, wells, surface drains and inlets) that require additional management when applying nutrients and pesticides?	Environmentally sensitive areas are identified. Family members, employees, and contractors are aware of and understand the management practices to protect these areas.	Some environmentally sensitive areas are identified.	Environmentally sensitive areas are not considered.	Areas identified on field maps with appropriate management or setbacks. -Next to surface waters -Fields with shallow groundwater -Fields with water wells -Areas near surface water inlets -Fields with highly erodible soils -Fields with highly leachable soils -Fields with high runoff potential Training/communications plan to inform workers and contractors of appropriate management or setbacks.	
2.02) Is soil erosion under control on the farm fields?	Soil erosion losses are within tolerances as documented by the revised universal soil loss equation (RUSLE2) and the Wind Erosion Prediction System (WEPS). Minimal evidence of erosion and no evidence of erosion of concentrated water flows. Cover crop may be in place.	RUSLE2 and WEPS are run on fields that are not: In pasture or hay ground, or no-till planting systems. Receiving fall tillage, with >30% residue on less than 12% slopes. Receiving more than one pass fall tillage that leaves fields rough with >40% residue and less than 8% slopes. And regardless of fall tillage, spring tillage leaves > 20% residue. And for all of the above there is no evidence of sheet, rill or gully erosion.	Excessive soil erosion is occurring on the farm.	RUSLE2 and WEPS calculations completed and on file.	

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SOIL AND WATER CONSERVATION PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
2.03) Are all streams, wetlands, farm ditches, and other bodies of water on the farm protected from polluted runoff and sediment with conservation practices?	Filter strips, riparian buffer strips, grassed waterways and other conservation practices are maintained between fields and all surface waters on the farm.	Conservation practices are maintained on some fields.	No conservation practices are maintained. Farm is immediately next to surface waters, drainage ditches and roads.		
2.04) Are cover crops planted to prevent soil erosion, trap nutrients and pesticides, and improve soil quality?	Cover crops are included in the crop rotation to protect soil and water resources and control erosion.	Cover crops are used occasionally.	Cover crops are not used.		
2.05) Are soil quality indicators evaluated?	Soil quality indicators (e.g., earthworm populations, water infiltration rates, soil compaction, percent plant and residue cover, pH, cation exchange capacity [CEC] and percent organic matter) are evaluated on all fields.	Some soil quality indicators are evaluated.	No soil quality indicators are evaluated.		
2.06) Are conservation and management practices routinely inspected and evaluated?	Owner or trained individual routinely inspects and evaluates conservation and management practices.	Conservation and management practices are informally evaluated during field operations.	Practices are not inspected nor evaluated.		

PEST MANAGEMENT PRACTICES

CONTINUING EDUCATION AND KNOWLEDGE					
3.01) How does the grower stay current on new pest management practices and strategies for weeds, insects and diseases?	Attend educational meetings, read educational materials provided by the university or other reliable sources. At least one new pest management practices adopted on a trial basis each year.	Occasionally attend educational meetings and read new pest management materials.	Rely on outdated pest management practices.		

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PEST PREVENTION AND AVOIDANCE					
3.02) Does the grower consult with a pest management consultant or service during the growing season?	Employs and independent crop consultant throughout the growing season that is knowledgeable of IPM. OR, Utilizes public reports and services from the university, local agribusiness or other reliable providers.		Relies on outdated pest management practices.		
3.03) Does the grower review previous growing season pest management activities and results?	Previous pest populations, pest suppression activities/pesticide usage and crop yield/injury are reviewed. Records used for future pest management plans.	No.			
3.04) When available, are certified seed or plant materials (tubers, crowns, transplants, etc.) used that are insect, weed and disease-free?	Certified or quality seed and planting materials used whenever possible.	Bin-run or uncertified planting material that is cleaned and treated.	Use saved seed or planting materials that is untreated and potentially infected with insects, weed and/or disease pests.		
3.05) Are crops (and plant families) rotated to break pest cycles and to maximize crop yields?	Three year or longer rotations are utilized to break pest cycles and to reduce the need for pest suppression practices.	Short (< 3 year) rotations are utilized because of intensive cropping systems. Cover crops utilized whenever possible to improve system.	No rotation followed. Continuous cropping system results in increased pest pressures and reduced yields.		
3.06) Are pest resistant and tolerant varieties planted?	Pest resistant and tolerant varieties are planted when available.	Varieties without resistance and tolerance are planted, resulting in the need for pest suppression practices.			
MONITORING					
3.07) Are fields scouted for pests during the growing season?	All fields are scouted on a weekly schedule, by a qualified individual trained in IPM. Scouting reports and records are filed.	Fields are scouted at critical times, but not on a weekly basis.	Fields are not scouted.		

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MONITORING (CONTINUED)					
3.08) Are weather conditions relevant to pest management monitored? (i.e. air and soil temperature, precipitation, soil moisture, wind speed and direction, leave wetness, etc.)	On-farm weather station(s) provide data to assist with crop and pest management decisions. OR, MSU Enviro-weather (**www.enviroweather.msu.edu**) or other weather-based models are used to assist with crop and pest management decisions.	Consumer weather information used for crop and pest management decisions.	Weather conditions are not considered when making crop and pest management decisions.		
PEST APPLICATION					
3.09 Are soil characteristics and field conditions considered when making pesticide applications?	Soil characteristics (texture and organic matter) and field conditions (wind speed and direction, slope and moisture) are assessed when deciding on pesticide application practices. Site-specific or variable-rate technology may be used.	Whole-field application rates are based on the most vulnerable soil type in the field and field conditions.	Pesticides are applied at full labeled rates without regard to vulnerable soil characteristics or field conditions.		
3.10) How are surface and groundwater protected in and near fields from pesticide contamination?	Pesticide labels with groundwater and surface water advisory statements are followed.		**Labeled directions are not followed.**[18] Spray is applied adjacent to or over the top of surface water, tile drain inlet or well. Other field restrictions are ignored.	Field maps indicating pesticide label setbacks and other restrictions are followed. Plan identifies sensitive areas and how they are treated. Drift management plan available.	
3.11) Are leaching/runoff and toxicity potentials considered when making pesticide decisions?	Pesticides with the lowest potentials for leaching, runoff and non-target toxicity are always selected for use in fields. Some spray applications delayed to non-rainy periods. Mulches and ground covers used under trees to prevent leaching.	Leaching/runoff and toxicity potentials are occasionally considered when selecting soil-applied pesticides.	Pesticide choice is not based on leaching/runoff and toxicity potentials. Only cost and effectiveness are considered.		

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PEST APPLICATION (CONTINUED)					
3.12) Are the purchasers and applicators of restricted-use pesticides (RUP) certified applicators?	***The purchaser and applicator of RUP comply with certification requirements.***		**Non-certified and unsupervised applicators use RUP.**[6]	RUP certification confirmed.	
3.13) How are workers and pesticide handlers protected from exposure to pesticides?	***Workers and handlers:*** ***-Follow specific label requirements.*** ***-Are provided decontamination supplies.*** ***-Are trained or certified applicators.*** ***-Are informed of pesticide applications.*** ***-Are provided personal protective equipment.*** ***-Are provided emergency assistance, if needed.***	**Worker Protection Standard requirements are partially met.**[20]	**Worker Protection Standard requirements are ignored.**[20]		
3.14) If pesticides are mixed and loaded in the field, how are they handled?	A mixing and loading pad is used. Mixing and loading is done more than 150 feet from any well and more than 50 feet from surface waters.	Mixing and loading are done in different locations in the field, more than 150 feet from a private well, more than 800 feet from a public well* and more than 50 feet from surface waters. A mixing and loading pad is not used.	Pesticides are mixed and loaded at the same spot in the field year after year without a pad.	Proper pesticide mixing and loading demonstrated.	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.15) How are empty pesticide containers rinsed and disposed?	***Containers are triple-rinsed or power rinsed, punctured*** and returned to dealer, properly recycled, or disposed of in a licensed landfill. Bags are returned to dealer or taken to licensed landfill. Properly rinsed containers can be disposed in a dumpster that is taken to a licensed landfill.	**Disposal of empty containers and bags on the farm property.**[8,18]	**Disposal of partially filled containers. Burning of containers on the farm property.**[8,18]	Evidence of containers being recycled.	
3.16) Do pesticide applicators read and follow the label instructions?	***Everyone using pesticides follows label and labeling instructions.***		**Label and labeling instructions are not always followed.**[18]	Evidence that labels are followed.	
3.17) What management practices are used to prevent the development of pest resistance to certain pesticides.	Pesticides with different modes of action are rotated within a season or from one season to the next or used in tank mixes where permitted. Pesticides at highest risk of resistance are not used when alternatives are available. Refuge requirements for transgenic seed are followed.	Some but not all pesticide modes of action are rotated or tank mixed. Pesticides at highest risk of resistance are used sparingly.	Pest resistance is not considered when selecting pesticides. Refuge requirements for transgenic seed are ignored.		
3.18) Is a spill kit immediately available to pesticide applicators in the field?	***A spill kit*** containing a shovel, absorbent material, PPE and a container ***is immediately available.***		**No spill kit is available** or no plan is in place to contain spills.[6]	Adequate spill kit present.	
3.19) How is excess spray mixture or rinse water from the interior of the spray system disposed?	***Spray mixture is applied to labeled site at or below labeled rate of application*** or appropriately stored for later use.		**Spray mixture dumped at farmstead or in nearby field or pond.**[4]	Satisfactory explanation of procedures for excess spray mixtures.	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.20) Where is the exterior of the spray equipment and tractor washed if there is accumulated residue?	Washed in containment or washed in the field in different locations >200' from surface water, catch basins, or tile inlets and >150' from a well.		Washed in the same location without collection, or in the field <200' from surface water, catch basins or tile inlets or <150' from a well.	Satisfactory explanation of procedures for washing spray equipment.	
3.21) How is accumulated spray building wastewater or other comingled rinsates that cannot be directly applied to growing crops disposed?	Applied to a site where there is growing vegetation or where a crop will be planted following labeled setbacks at or below labeled rates. Application areas are rotated and records of contents of material and application site are kept. Or taken to a hazardous waste landfill.		**Dumped at the farmstead, in the field, or direct discharge to surface water.**[4]	Records of application provided.	
3.22) How is the proper and safe operation of pesticide application equipment ensured?	***Equipment is correctly calibrated at least annually and leaks are minimized to apply intended rate and distribution pattern.***		**Pesticide application equipment is not properly calibrated.**[6]	Date of annual equipment calibration recorded.	
3.23) How are pesticide applications assured to remain on-target and minimize off-target pesticide spray drift?	***A written drift management plan is utilized that minimizes off-target drift.***	Pesticide applications follow labeled instructions for target pests, but no drift management plan is utilized.	**Spraying operations are completed regardless of weather conditions or forecast, and regardless of the potential of off-target drift.**[7]	Written drift management plan on file.	
3.24) How is pesticide spray drift minimized when using an air blast sprayer?	Do not spray when the wind speed is greater than 10 mph. Do not spray during thermal inversions. Cut off spray for missing trees in the row.		Drift minimization is not considered when using an air blast sprayer.		

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PEST MANAGEMENT PRACTICES - PESTICIDE APPLICATION (CONTINUED)					
3.25) What pesticide application records are kept?	***Accurate records are maintained of all agricultural crop applications of pesticides for at least three years.***	Partial pesticide records are kept. Complete pesticide application records will be kept in the future, for review at the time of reverification.	No pesticide records kept. Chemicals used are known by memory or invoices only.	Pesticide records for the past three years on file (or plans to maintain records). - Date of application - Time of application - Pesticide brand/product name - Pesticide formulation - EPA registration number - Active ingredient(s) - Restricted-entry interval - Rate per acre or unit - Crop, commodity, stored product, or site that received the application - Total amount of pesticide applied - Size of area treated - Applicator's name - Applicator's certification number - Location of the application - Method of application - Target pest - Carrier volume per acre Additional optional records: - Full or alternate-row application - Weather conditions - Pest monitoring records and predictive model timing used - Follow-up evaluation of action taken	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORD OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.26) Are pesticides selected and applications timed to minimize impact on beneficial insects (natural enemies and pollinators)?	Pesticide toxicity to beneficial insects is considered. Pesticide applications timed to avoid injury to beneficial insect populations.		Broad spectrum pesticides used on a calendar schedule and not timed to avoid beneficial insects.		
3.27) Are areas of the farm set aside as habitat for pollinators?	At least two acres is devoted to conservation of native bees and other pollinators by providing flowers through the season, and this is planted with a specific mix of wildflowers for this purpose.	Some areas of the farm are set aside to provide flowers for bees and other pollinators.	No habitat is provided for pollinators.	Note: Cost share is available through enrollment in the USDA pollinator conservation programs (E.g., USDA's Farm Service Agency [FSA] Conservation Reserve Program-State Areas for Wildlife Enhancement [CRP-SAFE] pollinator program).	
3.28) Is habitat provided to enhance populations of natural enemies and beneficial organisms?	Ground cover plantings/mulches used under plants and in drive rows for alternative nutrient management and beneficials. Flowering plants provide for season-long nectar and pollen, and habitat provided to enhance natural enemy populations.	Ground covers/mulches used under plants.	Management of beneficial organism is not considered.		
3.29) Are cultural practices managed to enhance populations of beneficial natural enemies (NE)?	Use alternate-row mowing method for insect control, NE enhancement and pollinator preservation. Maintain mow-free strips around planting perimeter for natural enemy and pollinator preservation.	Maintain mow-free strips around planting perimeter for natural enemy and pollinator preservation.	Beneficial insect management is not considered.		

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PEST MANAGEMENT PRACTICES (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK - 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
PEST MANAGEMENT PRACTICES - PESTICIDE APPLICATION (CONTINUED)					
3.30) If a soil fumigant pesticide is used on the farm, is a fumigation management plan (FMP) utilized?	A written, site-specific fumigation management plan that meets US EPA requirements is prepared and utilized before fumigation begins.		**A FMP is not prepared.**[18]		
3.31) How are agricultural pollution emergencies handled?	Call 911, sheriff, fire or emergency services department for personal safety issues. ***All uncontained spills or releases should be reported to the MDARD Agriculture Pollution Emergency Hotline: 1-800-405-0101***, or the MDEQ Pollution Emergency Alerting System: 1-800-292-4706.		**No contact to state or local authorities. Spill discharges directly to surface water.**[4]	Farm emergency plan on file, or local emergency telephone numbers immediately available.	
WATER USE					
4.01) If the groundwater and surface water pumps have a combined capacity to pump more than 100,000 gallons per day (70 gallons per minute) for agricultural purposes, has water use been registered and reported to the State of Michigan?	Pump capacity is less than 100,000 gallons per day (70 gallons per minute). Or, Register and report annual water use to Michigan Department of Agriculture and Rural Development by April 1.		**Pump capacity is greater than 100,000 gallons per day (70 gallons per minute) and water use is not reported to the State of Michigan.**[13]	Farm records indicate compliance.	

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WATER USE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
4.02) Have new or increased large quantity water withdrawals been registered (pumping capacity greater than 70 gpm or 100,000 gallons per day for systems established after July 9, 2009)?	The Water Withdrawal Assessment Tool (WWAT) was used to determine if a proposed withdrawal or expansion is likely to cause an Adverse Resource Impact, and to register the water withdrawal with MDEQ, prior to beginning the withdrawal. The WWAT and registration site is: http://www.miwwat.org/		**Pump capacity is greater than 100,000 gallons per day (70 gallons per minute) and water use is not reported to the State of Michigan.**[13]	Producer's verbal indication of compliance with regulation.	
4.03) Is there an unused well located in the cropping area?	No unused well, or abandoned well properly sealed.	Unused well temporarily abandoned properly: -Meets minimum isolation distances -Is disconnected from any water distribution piping. -Has the top of the casing securely capped.	**Unused, unsealed well in cropping area.** [1]	Unused well(s) properly sealed or temporarily abandoned.	

IRRIGATION MANAGEMENT PRACTICES

(IF IRRIGATION IS NOT USED, SKIP THIS SECTION.)

SYSTEM MANAGEMENT					
5.01) Are all sprinkler systems operated to minimize drift and off-target application?	***All sprinkler systems are operated to minimize drift and off-target application.*** No off-target irrigation application present.	Most sprinkler systems operated to minimize drift and off-target irrigation applications occur.	Sprinkler systems are often operated under windy conditions. Water is sprayed over roads, adjacent property or structures.	No field evidence of off-target applications.	

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IRRIGATION MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
SYSTEM MANAGEMENT					
5.02) Is noise control provided when needed?	***Noise control is provided*** when needed.	In most areas of concern, noise control is provided when needed.	Noise control is not provided when needed.		
RECORD KEEPING					
5.03) Are proper irrigation system management records collected and retained for use in decision-making and for reference in case of complaints?	Irrigation system management records are collected and retained, including: ***- Crop type and location.*** ***- Source of the water used.*** ***- Date,*** method ***and amount of each irrigation water application.*** ***- All system inspections and repairs that influence uniformity and leaks.*** ***- Calibration of fertigation and chemigation equipment, if used.*** ***- Records on system uniformity evaluation.***	Most of irrigation system management records are collected and retained. Plan to maintain complete irrigation records.	Few or no irrigation system management records are collected or retained.	Irrigation records on file, or plans to maintain records.	
IRRIGATION SCHEDULING					
5.04) How is irrigation scheduling used to determine when it is necessary to irrigate and how much water should be applied during each irrigation event?	Irrigation water is scheduled on the basis of: ***- Available soil water for each unit scheduled.*** ***- Depth of rooting for each crop irrigated.*** ***- Allowable soil moisture depletion at each stage of crop growth.*** ***- Measured, estimated or published evapotrans-piration data to determine crop water use.*** ***- Measured rainfall in each field irrigated.***	Irrigation water is scheduled on the basis of observed soil moisture content and/or daily water crop usage.	Irrigation water is applied at a set rate per week if no precipitation is received.	Scheduling system evident by records.	

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IRRIGATION MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
APPLICATION PRACTICES TO AVOID RUNOFF AND LEACHING					
5.05) Is there a rain gauge in every irrigated field?	***Every field is being managed for irrigation has a rain gauge in the field.*** Rain events are observed and used in conjunction with irrigation scheduling.	Most fields have a rain gauge; plan to have gauge in all fields.	No rain gauges OR only one rain gauge at the farmstead.	Rain gauges in all irrigated fields, or plan to maintain in all fields.	
5.06) Is irrigation water runoff and ponding minimized?	***Sprinkler application rates are below the soil infiltration rate.*** Nutrient leaching is minimized.	Most sprinkler application rates are below the soil infiltration rate. Some runoff and ponding is present.	Sprinkler application rates exceed the soil infiltration rate. Runoff and ponding is commonly visible.	No indication of significant runoff or ponding in irrigated fields.	
5.07) Have all irrigation systems been evaluated for application uniformity?	***All irrigation systems have been evaluated for uniformity.*** Corrections are made to the system to improve uniformity.	Some irrigation systems have been evaluated for uniformity. Remainder of systems scheduled to be evaluated.	Irrigation system uniformity has not been evaluated.	Uniformity tests on file. Schedule for evaluating systems that have not been evaluated.	
5.08) How is the amount of irrigation water delivered accurately determined?	***All water applications are accurately determined:*** -by knowing actual flow delivered (GPM) and time of application. -or, by using a flow meter. -or, by average output caught with system evaluation.	Water applications are estimated or based on rates given by the irrigation vendor or installation company.	Water application amounts not determined. Excess application occurs.	Irrigation water delivered by irrigation system is accurately determined.	
5.09) Are split applications of nitrogen fertilizer used when nitrogen is applied in an irrigated field?	***Split applications of nitrogen fertilizer are made when nitrogen is used in an irrigated field.*** N application does not exceed MSU recommendations.		Nitrogen fertilizers are applied through irrigation on the basis of visual crop symptoms. Total N applied exceeds MSU recommendation.		

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IRRIGATION MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
APPLICATION PRACTICES TO AVOID RUNOFF AND LEACHING (CONTINUED)					
5.10) How far is the fertilizer/pesticide chemigation storage or fertigation/chemigation system located from surface water (ponds, streams, rivers, drains, etc.)?	***200 feet or greater.***	Less than 200 feet with appropriate security measures.	Less than 200 feet.	Appropriate chemigation storage or fertigation/chemigation system isolation from surface water.	
5.11) Is excess irrigation avoided?	***Irrigation water applications in excess of the quantity of water needed to replace the soil/substrate moisture deficit are avoided.***	Excess irrigation water applications may occur occasionally.	Excess irrigation water applications are common.		
WELLHEAD PROTECTION					
5.12) Is the irrigation well adequately protected from contamination from pesticides and fertilizers when fertigation and chemigation are used?	***Anti-backflow device is installed,*** including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and agricultural chemical/fertilizer storage and preparation areas are at least 150 feet from the well, or at least 150 feet from the well, or at least 50 feet from the well, with secondary containment. Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	***Anti-backflow device is installed,*** including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and agricultural chemical/fertilizer storage and preparation areas have secondary containment, but **storage and preparation areas are less than 50 feet from the well.**[1] Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**No anti-backflow device,**[1] no secondary containment and **less than 150 feet isolation distance from irrigation well.**[1]	Adequate protection of the well provided.	

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IRRIGATION MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
WELLHEAD PROTECTION (CONTINUED)					
5.13) If the irrigation well is interconnected with a surface water source, is the well protected from backflow (back-pressure and back-siphonage) from the surface water into the well?	***Anti-backflow device installed,*** including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap that protects the well from back-pressure and back-siphonage into the well. Air gap is twice the diameter of the fill pipe or six inches, whichever is greater.	***Anti-backflow device installed,*** including a reduced pressure zone (RPZ) valve double check valve assembly, or chemigation valve with an internal air gap, to protect some irrigation water sources. Air gap is twice the diameter of the fill pipe or six inches, whichever is greater.	**No anti-backflow device installed.**[1]	Anti-backflow device installed, including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap.	
5.14) How far is the irrigation fuel tank from a storm drain, surface water or designated wetland?	Tank is more than 50 feet away or has some other engineering control present that would control or divert a spill from reaching a storm drain, surface water or designated wetland.		**Tank is 50 feet or less away from surface water**[16] and without an engineering control in place.	Appropriate fuel storage isolation distance from surface water. Engineering control, such as double-walled tank or dike.	

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IRRIGATION MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
WELLHEAD PROTECTION					
5.15) Is a horizontal sock well (HSW) present in the cropping system?	-HSW outlets are clearly identified as not being suitable for human consumption. -HSW is completely separated (no common piping) from any potable water supply system. -HSW meets isolation distance requirements the entire horizontal length of the HSW -Both ends of the HSW are identified.	-HSW outlets are clearly identified as not being suitable for human consumption. -HSW is completely separated (no common piping) from any potable water supply system. -HSW meets isolation distance requirements the entire horizontal length of the HSW, except for chemigation/fertigation systems during active use season that have ***backflow prevention device installed,*** including a reduced pressure zone (RPZ), double check valve assembly, or chemigation valve with an internal air gap installed and secondary containment. -Both ends of the HSW are identified	**HSW is being used for human consumption, shares common piping with a potable water supply, does not have both ends clearly identified, or does not meet State of Michigan, for isolation distances,** or MAEAP Standard, **for its entire horizontal length.**[1,3]	Low or medium risk criteria are present or demonstrated.	

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OTHER ENVIRONMENTAL RISKS IN THE CROPPING SYSTEM

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
6.01) Is a live, restricted, or prohibited species on the land or in the waters owned by producer?	Such species is not known to be present.	Such species is present, but was not knowingly introduced, It was introduced under a permit, OR It is possessed under a permit.	**Such species is present because it was knowingly introduced without a permit, OR It is possessed without a permit.**[14]		
6.02) Does the farm business have a food safety plan that is followed to reduce the risk of foodborne illness?	A written food safety plan exists and is being implemented.	Food safety practices are generally followed, but not documented in a written plan.	A food safety program is not available.	Note: This is a GAP (Good Agricultural Practices) requirement. USDA will not certify the farm without a documented food safety program. Not required by Food Safety modernization Act but is recommended.	
6.03) Does the farm business have a person designated to implement and oversee a food safety plan?	The farm business has a designated food safety person(s) and they have gone through the Produce Safety Alliance grower training or equivalent.	The farm business has a designated food safety person(s).	There is no designated food safety person.	Note: This is a GAP (Good Agricultural Practices) requirement. USDA will not certify the farm without a food safety designee.	
6.04) Are there other activities, products, processes/equipment, services, byproducts and/or wastes in the cropping areas that pose contamination risks to groundwater or surface water?	No risk(s) identified.	Risk(s) identified and plan to mitigate the contamination risk(s).	No plan to mitigate contamination risk(s).	No other environmental risks found in cropping areas.	

A boxed risk level indicates the level required for environmental assurance verification.

Bold Black print indicates a violation of state or federal regulation.

Bold blue italic print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural Management Practices (GAAMPs).

Table 1. Federal, state and local environmental requirements for operation of this farm business.
This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline —1-800-622-9278, and MDARD Information — 1-800-292-3939.

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Air use permit	Permit to install and operate equipment or processes which may emit air contaminants (incinerators for burning animal carcasses or manure, and biodigesters and associated equipment are examples).	Before construction	MDEQ/Air Quality Division	N.A.
Farm motor vehicle fuel storage tanks greater than 1,100 gallon capacity (above- and below-ground tanks)	Fuel storage tanks have to be certified (aboveground) or registered (underground); a site plan has to have been submitted to the LARA before the installation is placed into service. Smaller tanks have other requirements to be met.	Annual	Department of Licensing and Regulatory Affairs (LARA)	
Groundwater discharge permit	Any discharge of waste or waste effluent into or onto the ground (e.g., egg wash water and milk cooling water [over 10,000 gallons/day] that is discharged) and any livestock facility over 5,000 animal units.	5 years	MDEQ Water Resources Division	
Land and water interface construction permits	Construction activities (dredging, filling, draining, construction, structure placement) in, across, under water.	Before construction	MDEQ/Water Resources Division	N.A.
Pesticide safety training for pesticide workers	The federal Worker Protection Standard for agricultural pesticides requires employers of pesticide handlers and workers to train employees on pesticide safety. Agricultural employers must be able to verify compliance.	Each employee must be trained every 5 years	MDARD/Pesticide and Plant Pest Management Division (PPPM)	
Private pesticide applicator certification	Any persons using or supervising the use of restricted-use pesticides (RUP) in the production of an agricultural commodity on their own or their employer's land must be a certified pesticide applicator.	3 years	MDARD/PPPM	
Septic permit (house and farm operation)	The first step in the process of determining if a piece of land that does not have municipal wastewater services available can be considered for an on-site septic system.	Before construction	Local health department	N.A.
Soil erosion and sedimentation control permit	Earth change activities within 500 feet of a lake or a stream, or that will disturb an area greater than 1 acre in size.	Before construction	County soil erosion permitting agency	
Water use reporting	Agricultural water users with the capacity to withdraw surface or ground-water that exceeds 100,000 gallons per day (70 gallons per minute) are required to report actual water withdrawals annually.	Annual	MDARD	
Identification guides for some species regulated by Part 413.	http://mnfi.anr.msu.edu/invasive-species/aquaticsfieldguide.pdf https://mnfi.anr.msu.edu/invasive-species/InvasivePlantsFieldGuide.pdf			

(continued on next page)

Table 1. Federal, state and local environmental requirements for operation of this farm business (continued).

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Water Withdrawal Assessment – new or increased large quantity withdrawal	The Water Withdrawal Assessment Tool (WWAT) is designed to estimate the likely impact of a water withdrawal on nearby streams and rivers. Use of the WWAT is required of anyone proposing to make a new or increased large quantity withdrawal (over 70 gallons per minute) from the waters of the state, including all groundwater and surface water sources, prior to beginning the withdrawal. The WWAT and registration site is **www.deq.state.mi.us/wwat**.	Before construction	MDEQ Water Resources Division	The registration is valid for 18 months.
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulation, ordinances and codes.	Before construction	Local health department	
Environmental Guidelines	**Description**	**Frequency**	**Administering Agency**	**Your Expiration Date**
Cranberry production	The Michigan Right to Farm Act (Act 93 of 1981) requires the establishment of generally accepted agricultural and management practices (GAAMPs). Agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance litigation. The GAAMPs are reviewed annually. The latest GAAMPs can be accessed at: **www.michigan.gov/mdard**.	Guidelines reviewed annually	MDARD	N.A.
Irrigation water use				
Farm market				
Manure management and utilization				
Nutrient utilization				
Pesticide utilization and pest control				
Site selection and odor control for new and expanding livestock production facilities				
MAEAP verification: livestock, farmstead, and cropping systems	MAEAP systems information and requests for verification available at **www.maeap.org** or by calling MDARD **517-284-5609**.	Five years	MDARD	

Table 2. Legal citations for environmental risks in Crop◆A◆Syst for Orchards and Fruit Producers

Footnote	Michigan Law	Description
1	Public Health Code, Public Act 368 of 1978	Part 127: Water Supply and Sewer Systems
2		Part 138 Medical Waste Regulatory Act
3	Safe Drinking Water Act, Public Act 399 of 1976	
4	Natural Resources and Environmental Protection Act, Act 451 of 1994	Part 31: Water Resources Protection
5		Part 55: Air Pollution Control
6		Part 83: Pesticide Control
7		Part 111: Hazardous Waste Management
8		Part 115: Solid Waste Management
9		Part 117: Septic Waste Servicers
10		Part 121: Liquid Industrial Waste
11		Part 169: Scrap Tires
12		Part 201: Environmental Response
13		Part 327: Great Lakes Preservation
14		Part 413: Wildlife Conservation
15	Bodies of Dead Animals Act, Public Act 239 of 1982 as amended	
16	Fire Prevention Code Public Act 207 of 1941	Storage and Handling of Flammable and Combustible Liquids
17	Grade A Milk Law, Public Act 266 of 2001	
	Federal Law	
18	Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)	
19	Title III of the Superfund Amendments and Reauthorization Act of 1986, also know as the Emergency Planning and Community Right-to-Know Act	
20	Worker Protection Standard for Agricultural Pesticides	
21	Clean Water Act	
22	Food Safety Modernization Act Food Safety Rule	

Crop Commodities					
CROP NAME	ACRES	CROP NAME	ACRES	CROP NAME	ACRES
Alfalfa		Cucumbers, Fresh		Oats	
Apples		Cucumbers, Pickling		Peaches	
Apricots		Dry Beans		Pears	
Asparagus		Fruit, Other		Potatoes	
Blueberries		Grapes, Juice		Rye	
Carrots		Grapes, Wine		Small Grain, Other	
Cherries, Sweet		Green Beans		Soybeans	
Cherries, Tart		Greenhouse, Annual		Squash/Pumpkin	
Christmas Trees		Greenhouse, Perennial		Sugar Beets	
Clover, Seed		Greens, Herbs		Sunflower	
Corn, Grain		Hay/Pasture		Vegetable, Other	
Corn, Seed		Hops		Wheat	
Corn, Silage		Mixed Garden		Other:	
Corn, Sweet		Nursery		Other:	
Note: Express acres to the closest quarter acre.					

	CROPPING ACRES
Total Acres Included in CNMP or NMP	
Total Acres Receiving Manure in CNMP or NMP	
Total Acres (or Square Feet) Receiving Fertilizer	
Total Acres (or Square Feet) Receiving Pesticides	
Total Acres (or Square Feet) Irrigated	
Approximate Acres of Buffer/Filter Strips	
Total Acres (or Square Feet) of Cover Crop (Annual)	
Total Acres (or Square Feet) of No-Till/Zone Till/Grass cover	
Total Acres (or Square Feet) of Conservation Tillage	
Total Number of Gullies Stabilized (Grade/Stabilization Waterways)	
Total Square Feet in Production Area (Greenhouse Only)	N/A
Milkhouse Waste Discharge Eliminated (gallons)	
Livestock Exclusion (feet)	
Silage/Feed Leachate Runoff Acres (size of pad)	
Total Volume of Manure Produced (gallons)	
Total Volume of Manure Being Applied (gallons)	
Total Volume of Manure Sold (gallons)	
Total Volume of Given Away (gallons)	
Pounds of N Available in Manure	
Pounds of P Available in Manure	
Pounds of K Available in Manure	
FARMSTEAD / GREENHOUSE	
Total Amount of Fuel Stored	
Fertilizer Storage Capacity (Max stored on-hand at one time)	
Pesticide Storage Capacity (Max stored on-hand at one time)	
Number of Wells Meeting the Distance Regulations on Farmstead	
FARMSTEAD ONLY	
Are Extremely Hazardous Substances (EHS) stored on the farm at the threshold limit?	

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Major revision (destroy old). 10:18 – 600 – HJ/BP

FARM·A·SYST

FOR MICHIGAN PRODUCERS

FAS 107 · October 2018

For MAEAP Verification:
Contact the MAEAP Office at the Michigan Department of Agriculture & Rural Development

(517) 284-5609

MAEAP

MICHIGAN STATE UNIVERSITY | Extension

Farm•A•Syst

Farmstead System Improvement Action Plan

Risk question	List high-risk practice(s) from Farm•A•Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed
3.05	(example) Pesticides stored on permeable floor surface.	Yes	Install concrete pad with curbs for pesticide storage area. Technical assistance — NRCS & MSUE. Cost share — NRCS.	Sept. 2018	**(√)** Completed Oct. 28, 2018

Farm•A•Syst

Farmstead System Improvement Action Plan (continued)

Risk question	List high-risk practice(s) from Farm•A•Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed

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Farm•A•Syst

Farmstead System Improvement Action Plan (continued)

Risk question	List high-risk practice(s) from Farm•A•Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed

I understand that this farmstead system assessment (Farm•A•Syst) and corresponding Farmstead System Improvement Action Plan were developed on the basis that I have disclosed, to the best of my knowledge, all information pertaining to my farmstead operations.

Farmstead address:

Street_____

City_____

State_____ Zip_____

Watershed name_____

Producer's signature _____

Date _____

Farm•A•Syst conducted by:

Name_____

Title _____

Organization_____ Date_____

MAEAP Verification Action Plan	Date
Target date for MAEAP verification of **Cropping System**	
Target date for MAEAP verification of **Farmstead System**	
Target date for MAEAP verification of **Livestock System**	
Target date for MAEAP verification of **Forest, Wetlands, & Habitat System**	

❑ Aerial map with farmstead boundaries is attached.

Introduction

In 2011, the Michigan Agriculture Environmental Assurance Program (MAEAP) was codified in law as set forth in P.A. 451, Part 87, of the Natural Resources & Environmental Protection Act (NREPA). The Farm•A•Syst tool is updated annually to incorporate the current MAEAP Standards for this system. The tool also includes applicable Generally Accepted Agricultural and Management Practices (GAAMPs) established under Michigan Right to Farm. The completed A Syst tool and associated plan and practices meet the requirement of a Conservation Plan, as defined in Part 82 of NREPA and referenced in Part 87 of NREPA. This statute also ensures producer confidentiality for any information provided in connection with the development, implementation or verification of a conservation plan or associated practices and is exempt from disclosure under the Freedom of Information Act.

The Michigan Agriculture Environmental Assurance Program is a comprehensive, proactive and voluntary agricultural pollution prevention program. It takes a systems approach to assist producers in evaluating their farms for environmental risks. The four systems are Livestock, Farmstead, Cropping and Forest, Wetlands and Habitat. Farm•A•Syst assesses the environmental risks of the Farmstead System.

The Michigan Right to Farm Act authorizes the Michigan Commission of Agriculture and Rural Development to develop and adopt GAAMPs for farms and farm operations in Michigan. These voluntary practices are based on available technology and scientific research to promote sound environmental stewardship. The current Right to Farm GAAMPs are posted on the Michigan Department of Agriculture and Rural Development (MDARD) Web site: www.michigan.gov/mdard.

Producers who complete the Farm•A•Syst assessment will be able to determine what management, structural or equipment changes (if any) will be needed for the farmstead to be environmentally assured through MAEAP.

Once the producer develops and implements a Farmstead Improvement Action Plan to address the risks indicated by the Farm•A•Syst assessment, he or she can contact MDARD at (517) 284-5609 to request a MAEAP Farmstead System verification process. The owner of a MAEAP verified farmstead will be eligible for incentives and can enjoy the peace of mind that comes from knowing that Farmstead System practices are consistent with the identified current Right to Farm GAAMPs. Verified Farmstead Systems are positioned to achieve regulatory compliance with state and federal environmental laws.

What is the Farmstead Assessment System?

The Farmstead Assessment System (Farm•A•Syst) is a series of risk questions that will help assess how effectively the farmstead structures, management practices and site conditions protect water resources. The risk questions are grouped in the following sections:

	Farmstead Improvement Action Plan	8	Septic System Management
1	Farmstead Site/Soil Evaluation	9	General Livestock Management
2	Water Well Condition	10	Livestock Manure Storage
3	Pesticide Storage and Handling	11	Livestock Lot Management
4	Pesticide Handler and Worker Safety	12	Silage Storage
5	Fertilizer Storage and Handling	13	Milking Center Wastewater Treatment
6	Petroleum Product Storage and Management	14	Other Environmental Risks in the Farmstead System
7	Waste Management		

How Does Farm•A•Syst Work?

1) Select all relevant sections for the farm.

2) Answer the risk questions by selecting the statement that best describes conditions on the farmstead. Indicate the risk level in the column to the right. Skip any questions that don't apply to the farmstead.

   Note: For MAEAP verification, complete the risk questions with a Farm•A•Syst trained individual (water stewardship technician, Michigan State University Extension [MSUE] educator, Natural Resources Conservation Service [NRCS] resource conservationist or other MAEAP trained partner).

3) After completing each section of the risk questions, list the practices that present a high risk of contaminating water resources in the Farmstead Improvement Action Plan. The plan is printed inside the front cover of the bulletin. Also include medium-risk practices that do not meet MAEAP verification requirements.

4) In the Farmstead Improvement Action Plan, list:

- Alternative practices, structures or equipment that are planned to implement or install that will help reduce risks to water resources.
- Sources of technical and financial assistance.
- Target dates for accomplishing the changes.
- Target date for MAEAP verification of the Farmstead System.

Risk questions that address management practices that are regulated by state or federal law indicate **illegal practices with black bold print**. The numbered footnotes indicate what regulation(s) is (are) violated.

Risk questions that address management practices that are consistent with a specific GAAMP are identified with ***blue bold italic print.***

Finally, a blue box indicates the management level(s) required for MAEAP verification.

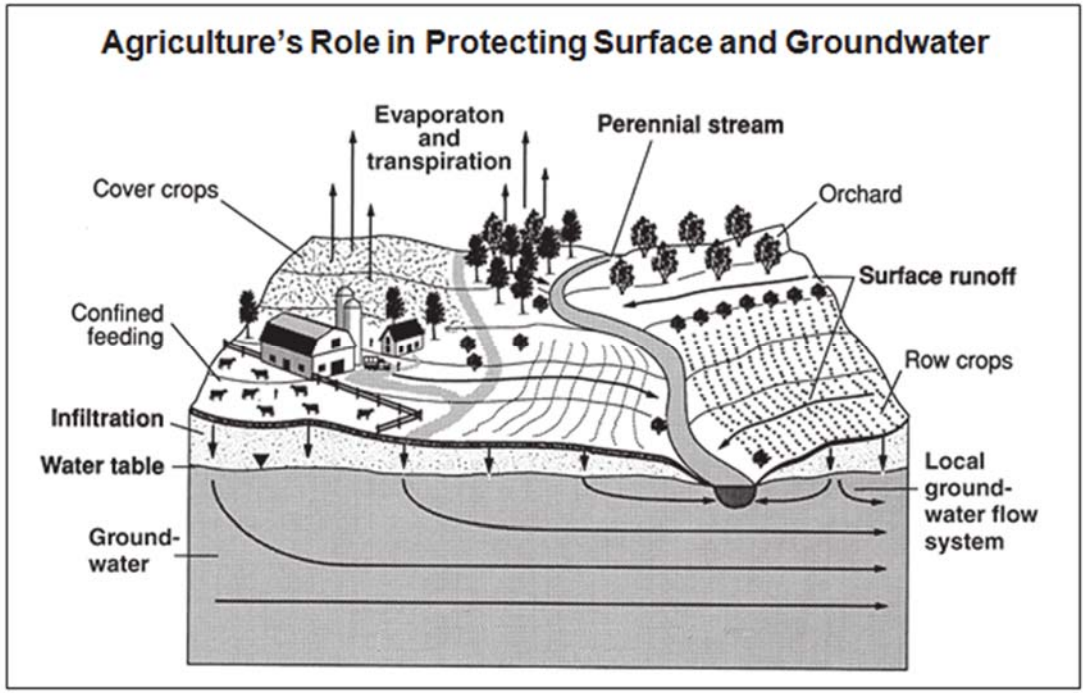
The numbered footnotes indicate what regulation(s) is (are) violated (refer to Table 3, page 63).

A Few Final Words

The key to Farm•A•Syst is that, once the environmental risks have been identified, implement a plan to reduce the risk(s).

Some of the stewardship practices that will reduce risks may cost very little and take very little time to implement. Other practices or structures may involve additional cost and may not be implemented for a few years. It is important, however, to have a plan to follow.

Once a plan has been developed and changes have been implemented to address the risks on the farmstead, MAEAP Farmstead System verification can be requested.



Farmstead Site/Soil Evaluation

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
1.00) Has there ever been a formal Right to Farm complaint against the farm?	There has never been a Right to Farm complaint, or the concern was not verified, or the concern was resolved.		There was a formal Right to Farm complaint and the concern was not resolved.	Producer's verbal indication of complaint history.	
1.01) What is the texture of the dominant soil (zero to five feet deep) at the farm site?	Very Fine-textured soils: clay, clay loam, silty clay loam, sandy clay, sandy clay loam, and silty clay.	Medium-textured soils: loam, silt loam, sandy loam and silt.	Course-textured soils: sand, fine sand, very fine sand, loamy very fine sand.		
1.02) What is the depth of the topsoil and subsoil (A & B horizons)?	Greater than 40 inches.	30 to 40 inches.	Less than 30 inches.		
1.03) What is the depth to the seasonal high water table?	Greater than six feet.	Three to six feet.	Less than three feet.		
1.04) What is the soil organic matter content?	Greater than four percent.	One to four percent.	Less than one percent.		
1.05) What is the makeup of the geological materials more than five feet underground?	Low-permeability materials: silt, clay, shale, clay stone.		Highly permeable materials: sand, gravel, fractured rock, karst limestone.	No significant erosion present at the farmstead.	
1.06) Is the farmstead site subject to visible soil erosion?	Site does not erode.	Slight or occasional erosion with limited risk to surface water.	**Significant erosion occurs annually.**[4]	No significant erosion present at farmstead.	

A boxed risk level indicates the level required for environmental assurance verification.
Bold black print indicates a violation of state or federal regulation.
Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Water Well Condition

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence of MAEAP Verification	Your Risk
2.01) How old is the well that serves the farmstead?	Less than 10 years old.	10 to 25 years old.	More than 25 years old, or age is unknown.		
2.02) What kind of well(s) is/are present?	Drilled and grouted.	**Drilled and not grouted**[1] or driven point or water jetted.	Large diameter (12 to 48 inches) dug well, or construction is unknown.		
2.03) Is the farm well classified as a private or public water supply? Use Table 1 in FAS107 for well type identification.	Private: potable water for drinking or domestic or greenhouse purposes for family members only.	Public: water for drinking or household/greenhouse purposes to persons other than the owner and family (greenhouse with employees or that is open to the public).			
2.04) What is the slope from the well to potential contamination sources?	Well is upgrade from all contamination sources.	Well is at grade from most contamination sources.	Well is downgrade or in a depression relative to contamination sources.		
2.05) What is the condition of the well casing and cap?	No holes or cracks. Cap tightly secured.		**Holes or cracks visible. Cap loose or missing. Water can be heard running into well. Exposed well casing bent.**[1]	Satisfactory well casing and cap present.	
2.06) If the drinking water well serves 25 or more people for 60 consecutive days is it registered as a Type II public water supply and has it been tested according to the local health department requirements?	The water supply is a Type IIa or IIb system that is registered with the local health department and routine water sampling is completed as required.	The water supply use is less than 20,000 gallons per day on average, making it a Type IIb water supply, and **water sampling is not completed in accordance with local health department requirements.**[3]	The water supply use is 20,000 gallons or more per day on average, making it a Type IIa water supply, and **water sampling is not completed according to local health department requirements.**[3]		

A boxed risk level indicates the level required for environmental assurance verification.
Bold black print indicates a violation of state or federal regulation.
Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Water Well Condition (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence of MAEAP Verification	Your Risk
2.07) From the well installation record, is there a protective soil layer (confining material) in the soil formation?	Continuous clay or shale layer more than ten feet thick. Or, Continuous clay mixture more than twenty feet thick.	Clay or shale layer less than ten feet thick. Or, Clay mixture less than twenty feet thick.	No protective layer (unconfined aquifer).		
2.08) What is the depth of the well casing?	More than 100 feet. Or, Minimum of 60 feet with ten feet of clay or twenty feet of clay mixture (confining material.)	At least 25 feet, but no confining material.	**Less than 25 feet, or no casing.**[1]		
2.09) What is the casing height above grade?	12 inches or more.	**From grade level to less than 12 inches.**[1]	**Below grade or in a pit or in a basement.**[1]		
2.10) When was the last time the well was inspected by a professional well driller or pump installer?	Within the past 10 years.	Between 10 and 20 years ago.	More than 20 years ago, or don't know when the well was last inspected.		
2.11) How is backflow or back siphoning of fertilizer or pesticide mixtures into the water supply prevented?	***Anti-backflow device installed***, including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and ***air gap maintained above the overflow level of the tank.*** Air Gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	Either an ***anti-backflow device installed,*** including reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, or ***air gap maintained above the overflow level of the tank.*** Air Gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**Neither an anti-backflow device nor air gap maintained.**[1]	Anti-backflow device installed, including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or air gap present or demonstrated.	

A boxed risk level indicates the level required for environmental assurance verification.

Bold black print indicates a violation of state or federal regulation.

Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Water Well Condition (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence of MAEAP Verification	Your Risk
2.12) Is there an unused well located on the farmstead?	No unused well or abandoned well properly sealed.	-Unused well temporarily abandoned properly: Meets minimum isolation distances. -Is disconnected from any water distribution piping -Has the top of the casing securely capped.	**Unused, unsealed well at farmstead.**[1]	Unused well(s) properly sealed.	
2.13) How often is the drinking water tested for nitrates and bacteria?	Tested yearly.	Tested within the past 3 years.	No water testing done, or more than 3 years since last test.	Water tests for nitrates and coliform bacteria within the past 3 years.	
2.14) What are the water test results?	No coliform bacteria or nitrates detected.	Water contamination detected. Public water well(s) test below health advisory limits.	Water contamination detected. **Public water well(s) test above health advisory limits.**[1]	Water tests within health advisory limits for public wells.	
2.15) Is the farm, or portions of the farm, included in a community wellhead protection area?	No.	Yes, or don't know, and soil characteristics and farm operations pose minimal risks to groundwater.	Yes, and soil characteristics and/or farm operations pose significant risks to groundwater.		
2.16) If a frost-free yard hydrant is connected to a water system, is the hydrant Michigan Department of Environmental Quality (MDEQ) approved?	MDEQ-approved yard hydrant protects water supply from contaminated water back-siphoned into the hydrant's drain valve. Or, **Yard hydrant is not MDEQ-approved,**[1] but an anti-backflow valve is installed between the hydrant and the water source.		**Yard hydrant is not MDEQ-approved**[1] and there is no anti-backflow valve.		

A boxed risk level indicates the level required for environmental assurance verification.
Bold black print indicates a violation of state or federal regulation.
Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Water Well Condition (continued)					
Risk Question	**Low Risk – 3 (Recommended)**	**Medium Risk – 2 (Potential Hazard)**	**High Risk - 1 (Significant Hazard)**	**Records or Evidence of MAEAP Verification**	**Your Risk**
2.17) If the drinking water well serves 25 or more people for 60 consecutive days (type IIb public water supply), has it been tested for arsenic?	Drinking water tested on a quarterly basis. Average arsenic level is less than 10 ppb.		**Drinking water is not tested.**[3]		
2.18) If the groundwater and surface water pumps have a combined capacity to pump more than 70 gallons per minute (100,000 gallons per day) for agricultural purposes, has water use been registered and reported to the State of Michigan?	Pump capacity is less than 70 gallons per minute (100,000 gallons per day); Or, Register and report annual water use to Michigan Department of Agriculture and Rural Development by April 1.		**Pump capacity is greater than 70 gallons per minute (100,000 gallons per day) and water use is not reported to the State of Michigan.**[14]	Farm records indicate compliance with water use reporting.	

A boxed risk level indicates the level required for environmental assurance verification.
Bold black print indicates a violation of state or federal regulation.
Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Water Well Condition (continued)					
Risk Question	**Low Risk – 3 (Recommended)**	**Medium Risk – 2 (Potential Hazard)**	**High Risk - 1 (Significant Hazard)**	**Records or Evidence of MAEAP Verification**	**Your Risk**
2.19) Is a horizontal sock well (HSW) present in the farmstead system?	HSW outlets are clearly identified as not being suitable for human consumption. HSW is completely separated (no common piping) from any potable water supply system. HSW meets isolation distance requirements the entire horizontal length of the HSW. Both ends of the HSW are identified.	-HSW outlets are clearly identified as not being suitable for human consumption. -HSW is completely separated (no common piping) from any potable water supply system. -HSW meeting isolation distance requirements the entire length of the HSW, except for chemigation/fertigation systems during active use season that have Reduced Pressure Zone (RPZ), double check valve assembly or chemigation valve with an internal air gap installed and secondary containment. -Both ends of the HSW are identified.	**HSW is being used for human consumption, shares common piping with a potable water supply, does not have both ends clearly identified, or does not meet State of Michigan isolation distances** or MAEAP standard **for its entire horizontal length.**[1, 3]	Low risk criteria are present or demonstrated.	

A boxed risk level indicates the level required for environmental assurance verification.
Bold black print indicates a violation of state or federal regulation.
Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Table 1: Farm Well Description and Isolation Distance

Table 1. Farm Well Description and Isolation Distances.

Farm Well Information		Isolation Distance (in feet) From:									
Description	Private or Public	Fuel Storage	Pesticide Storage	Fertilizer Storage	Mix/Load Area	Liquid Manure Storage	Dry Manure Storage	Dirt Animal Lot	Septic System	Other	Other
1											
2											
3											
4											
5											
6											
7											
8											

What is considered a private water supply?

A private water supply provides water to the supplier of the water (e.g., the owner) and includes water for the supplier's drinking water, household use, livestock water, irrigation, etc.

What is considered a public water supply?

In Michigan, wells that provide water to non-family member employees or that service a milkhouse or milkroom are considered public water supplies.

Public water supplies are classified based on capacity and number of employees.

- A Type II public water supply is a non-community supply with at least 15 service connections or which serves 25 or more individuals (employees) on an average daily basis for at least 60 days out of the year.
  - A Type IIa water supply has an average daily production for the maximum month of 20,000 gallons or more.
  - A Type IIb water supply has an average daily production for the maximum month of less than 20,000 gallons.
- A Type III public water supply is one that does not meet the above requirements for the number of service connections or employees.

Pesticide Storage and Handling

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence of MAEAP Verification	Your Risk
3.01) How far is the pesticide storage located from any water well? (Private wells include irrigation, livestock watering, cooling etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees). Use Table 1 in FAS107 for well type identification.	For private wells: • 150 feet or greater. Or, • with secondary containment, 50 feet or greater. For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well, OR, • Approved isolation distance deviation for the well, OR, • Between 75 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[1]	Appropriate pesticide storage isolation distance for site characteristics.	
3.02) How far is the pesticide storage located from surface water? (drains, streams, ponds, catch basins on farmstead, etc.)	***200 feet or greater.***	Less than 200 feet with appropriate security measures.	Less than 200 feet.	Appropriate pesticide storage isolation distance from surface water.	
3.03) How are pesticides delivered to the farm?	Just-in-time delivery provided by dealer or farmer to mix/load site.	Responsible, trained farm employee or family member or dealer transports pesticides to storage.	Untrained farm employee or family member transports pesticides.		

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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PESTICIDE STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.04) What kind of structure is used for pesticide storage?	Separate long-term or seasonal structure especially designed for pesticide storage.	Pesticides stored in separate single-use structure not designed or retrofitted for pesticide storage.	Pesticides stored in farm building used for multiple purposes.		
3.05) What design features does the pesticide storage have to contain spills and leaks?	Impermeable floor surface does not allow spills to soak into soil. Curb installed on floor to contain leaks and spills or individual package containment.	Impermeable floor surface without curb.	Permeable floor surface (wood, gravel or dirt floor) or impermeable floor with cracks. Spills could contaminate soil. **Drain in the floor that discharges to the environment.**[4]	Adequate secondary containment for pesticide storage.	
3.06) What type of pesticide storage shelving is used?	Metal or plastic shelving, with shelf lips to prevent containers from falling. And, Dry formulations are stored on upper shelves and liquids on lower shelves.	Metal or plastic shelves without lips. Or, Wood shelves, covered with an epoxy paint or plastic liner.	Bare wood shelving without lips. Or, No shelves, pesticides containers are on the floor where they may be damaged.		
3.07) What level of security is provided for the pesticide storage?	Fenced or locked area, ***secure from unauthorized access***. Storage is separate from all other activities.	Storage is open to activities that could damage containers or spill chemicals.	**Open access to pesticide storage could result in theft, vandalism, and injury to children, pets or wildlife.**[20]	Adequate pesticide storage security.	
3.08) What signage is posted on the storage facility?	***A highly visible, weatherproof sign indicates that pesticides are stored there. A "No Smoking" sign is also posted.***	Pesticide storage sign is posted, but "No Smoking" is not posted.	The pesticide storage has no signs.	Pesticide storage signage present.	

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PESTICIDE STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.09) What kind of spill kit is available at the pesticide storage?	***A complete spill kit is immediately available. A fire extinguisher approved for chemical fires is easily accessible*** and useable.	***Spill kit is immediately available***, but no fire extinguisher.	**A spill kit is not available.**[18] A fire extinguisher is not available.	Spill kit with fire extinguisher present at pesticide storage.	
3.10) What total quantities of pesticides are stored on the farm?	No pesticides stored at any time, or only seasonal use	1 gallon, or 10 pounds, or more of each pesticide in long-term storage.	More than 56 gallons, or more than 55 pounds, of each pesticide in long-term storage.*		
3.11) What quantities of liquid pesticides are stored?	No liquids – all dry formulations.	Some liquid formulations stored.	More than 55 gallons of liquid formulations stored.		
3.12) Are pesticides with high leaching potential stored?	No pesticides stored, or only pesticides with low leaching potential.	Pesticides with low and medium leaching potential stored.	Pesticides with high leaching potential stored.		
3.13) Have Extremely Hazardous Substances (EHS) been reported to authorities?	No EHS stored or used. Anhydrous ammonia is not used on the farm.	EHS stored or used on farm have been identified and reported to local and state authorities (if stored at or above threshold planning quantity).	**EHS stored or used on farm have NOT been identified or reported.**[21]	Records that indicate EHS have been shared with authorities or that EHS are not used on the farm.	
3.14) What is the condition of stored pesticide containers?	***Original containers clearly labeled or containers appropriate for pesticide storage that are properly labeled.*** No holes, tears or weak seams.	Old containers with hard to read labels. Patched containers, metal containers showing signs of rusting.	Containers have holes or tears that allow chemical to leak. **Some containers have no labels.**[20]	Stored pesticides in satisfactory condition with labels attached.	

*Producers who store certain bulk pesticides in containers that exceed 10 gallons, or 100 pounds, capacity may be subject to additional regulations.

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PESTICIDE STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.15) How are pesticide inventory control and disposal of unwanted products managed?	Pesticides accurately inventoried. Old product used first. Unusable product disposed of through Clean Sweep program.	Some inventory process maintained. Unsure of status of unusable product in storage.	No pesticide inventory maintained. Unusable product maintained in storage for indefinite time.		
3.16) Is there a written emergency plan to deal with spills and other farm emergencies?	Up-to-date plan developed and shared with authorities (if required), employees and family members.	More than one-year-old plan or an incomplete plan is available.	An emergency farm plan has not been developed.	An up-to-date emergency plan.	
3.17) Is there a written pesticide drift management plan for applications made at the farmstead?	***A written drift management plan is utilized that minimizes off-target drift.***	Pesticide applications follow labeled instructions for target pests, but no drift management plan is utilized.	**Spraying operations are completed regardless of weather conditions or forecast, and regardless of the potential of off-target drift.**[18]	Drift management plan on file.	
3.18) How far is the mixing and loading area from any water well? (Private wells include irrigation, livestock watering, cooling etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees). Use Table 1 in FAS107 for well type identification.	For private wells: • 150 feet or greater. OR, • with secondary containment, 50 feet or greater. For Type IIb or Type III public wells: More than 800 feet or greater from the farm well, OR, • Approved isolation distance deviation for the well, OR, • Between 75 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[1]	Appropriate mixing and loading area isolation distance for site characteristics.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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PESTICIDE STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.19) On the farmstead, how far is the mixing and loading area from surface water or catch basins?	***200 feet or greater.***	Less than 200 feet, with appropriate security measures.	Less than 200 feet, without appropriate security measures.	Appropriate mixing and loading area isolation distance from surface water.	
3.20) How is the potential reduced for surface and groundwater contamination at the mix/load area(s)?	Mixing and loading pad with curb keeps spills contained. Sumps allow collection and transfer to storage.	Mixing and loading in the field without mix/load pad. Different location every time reduces risks to groundwater. Or, mixing and loading on concrete pad without curbs.	No mixing and loading pad. Permeable soil. Spills soak into ground. Same location every time.	Satisfactory explanation of mixing and loading procedures. No evidence of burned vegetation.	
3.21) How is backflow, or back siphoning, of pesticide mixtures into the water supply prevented?	***Anti-backflow device installed***, including a Reduced Pressure Zone (RPZ) valve, double check valve assembly or chemigation valve with an internal air gap, or 6 inch ***air gap maintained above the overflow level of the tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	Either an ***anti-backflow device installed,*** including a RPZ valve, double check valve assembly or chemigation valve with an internal air gap, or 6 inch ***air gap maintained above the overflow level of the tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**Neither an anti-backflow device**, including a RPZ valve, double check valve assembly or chemigation valve with an internal air gap, **nor air gap maintained.**[1]	Anti-backflow device installed, including a RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or air gap present or demonstrated.	
3.22) How are tank overflows prevented when filling the sprayer?	***Sprayer monitored when being filled.***		Sprayer seldom or never monitored when being filled.	Satisfactory explanation of spray tank filling procedures.	
3.23) How are pesticides, additives and water quantities measured when loading the sprayer system?	***Measuring devices*** labeled and ***kept in pesticide storage area. Devices rinsed and rinse water put into spray tank.*** Tank capacities labeled.		A variety of unlabeled measuring devices used. Devices may be used for other purposes. Tank capacities not identified.	Set of dedicated measuring devices for pesticides. Spray tank capacities labeled.	

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PESTICIDE STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.24) How are pesticide products transferred from their containers to the sprayer tank?	Closed system for all liquid and dry product transfers.	All liquid and dry products hand-poured. Mixing/storage tank opening easy to reach.	All liquid and dry products hand-poured. Mixing/storage tank opening hard to reach.	Satisfactory explanation of procedures for excess spray mixtures.	
3.25) How is excess spray mixture or rinse water from the interior of the spray system disposed?	***Spray mixture applied to labeled site at or below labeled rate of application*** or appropriately stored for later use.		**Spray mixture dumped at farmstead or in nearby field or surface water.**[4]	Satisfactory explanation of procedures for excess spray mixtures.	
3.26) How is accumulated spray building wastewater or other comingled rinsates that cannot be directly applied to growing crops disposed?	Applied to a site where there is growing vegetation or where a crop will be planted following labeled setbacks at or below labeled rates. Application areas are rotated and records of contents of material and application site are kept. Or taken to a hazardous waste landfill.		**Dumped at the farmstead, in the field, or discharged to surface water**.[4]	Records of application provided.	
3.27) Where is the exterior of the spray equipment and tractor washed if there is accumulated residue?	Washed in containment or washed in the field in different locations >200' from surface water, catch basins or tile inlets and >150' from a well.		Sprayer washed at the farmstead. **Rinse water dumped at farmstead or in nearby area or pond.**[4]	Satisfactory explanation of procedures for rinsing sprayer system.	
3.28) How are empty pesticide containers rinsed and disposed?	***Containers triple-rinsed or power-rinsed, punctured*** and returned to dealer, or disposed of in a licensed landfill. Bags are returned to dealer or taken to licensed landfill. Properly rinsed containers can be disposed in a dumpster that is taken to a licensed landfill.	**Disposal of empty containers and bags on the farm property.**[9]	**Disposal of partially filled containers. Burning of containers on the farm property.**[5,9]	Rinsed jugs stockpiled for recycling or landfilling. No un-rinsed jugs on farmstead.	

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PESTICIDE STORAGE AND HANDLING (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK - 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
3.29) What type of pesticide containers are purchased?	Where available, all pesticide products are purchased in recyclable or returnable containers to reduce the number of empty containers that require disposal.	Some pesticide products are purchased in recyclable or returnable containers.	Most pesticides are purchased in containers that require special handling or treatment before disposal.		
PESTICIDE HANDLER AND WORKER SAFETY					
4.01) How are pesticide handlers/workers trained on pesticide use and handling?	***All handlers/workers are certified pesticide applicators or have had Worker Protection Standard (WPS) training.***		**Handlers/workers are not certified pesticide applicators and have not had WPS training.**[22]	Pesticide applicator certification or WPS training.	
4.02) How are handlers/workers informed of risks associated with pesticide applications?	***Central notification of pesticide applications is provided. Display includes EPA-approved safety poster, emergency medical information and pesticide application information.***	**Central notification provided, although not all posting requirements are met.**[22]	**No central notification provided.**[22]		
4.03) What supplies are provided to handlers/workers for pesticide decontamination?	***Clean water, soap, disposable towels and clean coveralls (handlers) are available for all handlers/workers within one-quarter.***	**A decontamination site is provided, although not all WPS requirements are met.**[22]	**A decontamination site is not available.** [22]		
4.04) How are workers notified of pesticide applications?	***Oral and/or posted warnings about pesticide application provided.***		**No notice about pesticide application provided.** [22]		
4.05) Who provides and maintains personal protective equipment (PPE) and trains handlers in its use?	***All label-required PPE provided and maintained by employer. Training on use of PPE provided.***	**WPS requirements for PPE partially met.**[22]	**PPE not provided.**[22]		

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FERTILIZER STORAGE AND HANDLING

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.01) How far is the fertilizer storage located from any water well? (Private wells include irrigation, livestock watering, cooling etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees) Use Table 1 in FAS107 for well type identification.*	For private wells: • 150 feet or greater. OR, • with secondary containment 50 feet or greater. For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well. OR, • Approved isolation distance deviation for the well. OR, • Between 75 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[3]	Appropriate fertilizer storage isolation distance for site characteristics.	
5.02) How far is the fertilizer storage located from surface water? (drains, steams, ponds, catch basins on farmstead, etc.)	***200 feet or greater.***	Less than 200 feet with appropriate security measures.	Less than 200 feet.	Appropriate fertilizer storage isolation distance from surface water. Note: bulk liquid fertilizer storages installed after August 13, 2008, having a capacity greater than 2,500 gallons, or having combined capacity of all takes greater than 7,500 gallons, must be located 200 feet or more from surface water.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.03) Is the fertilizer storage facility (both liquid and dry) identified with a sign?	Storage facility labeled "Fertilizer", or the fertilizer containers labeled with fertilizer analysis.	No sign.		Note: Bulk liquid fertilizer storages installed after August 13, 2008, having a capacity greater than 2,500 gallons, or having combined capacity of all tanks greater than 7,500 gallons, must be located 200 feet or more from surface water.	
5.04) What level of security is provided for the fertilizer storage?	***Fertilizer storage areas, valves, and containers are secured when not in use.***	Appropriate conditions are partially met.	Fertilizer storage facilities are not locked or secured by any means. Open access to theft, vandalism and children exists.	Adequate fertilizer storage facility.	
5.05) Is fertilizer stored in the direct presence of fuel products?	No. Fertilizer is not stored in the direct presence of fuel products.		Yes. Fertilizers and fuel products are stored together – posing an increased potential for explosions and significant disposal problems.		
5.06) Is liquid fertilizer stored in the direct presence of pesticide products?	No.	Fertilizer and pesticide products are stored in the same structure, but separated with secondary containment.	Yes. Fertilizers and pesticide products are stored together – posing an increased potential for significant disposal problems.		
5.07) How often is the fertilizer storage area inspected for safety concerns?	***At least annually.***		No regular inspections of the storage facility.	Evidence fertilizer storage is inspected at least annually.	
5.08) Is there a written emergency plan to deal with fertilizer spills, discharges and other farm emergencies?	Up-to-date plan developed and shared with authorities (if required), employees and family members.	More than one-year-old plan or an incomplete plan is available.	An emergency farm plan has not been developed.	Up-to-date emergency plan.	

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.09) What total quantities of liquid fertilizers are stored on the farm?	No liquid fertilizer stored at any time.	Less than 2,500 gallons.	More 2,500 gallons.		
5.10) What quantities of dry fertilizers are stored?	No dry fertilizer stored at any time.	Less than 20 tons.	More than 20 tons.		
5.11) What kind of structure is used for dry fertilizer storage?	***A structure or device capable of preventing contact with precipitation and/or surface water.***		Storage allows fertilizer contact with precipitation and/or surface water.	Satisfactory dry fertilizer storage facilities.	
5.12) What kind of container is used for liquid fertilizer storage?	***Stored in containers approved for, and compatible with, the fertilizer being stored.***		Liquid fertilizer stored in containers not approved for/or compatible with the fertilizer being stored. Or fertilizer stored in underground tanks.	Satisfactory liquid fertilizer primary storage containers.	
5.13) Are poly tanks used as intended?	Yes. Vertical (upright) tanks are used for stationary fertilizer storage, and horizontal tanks with tie-down features are used for stationary storage and/or transportation applications.		Vertical tanks are used as mobile nurse tanks or in other transportation applications.		
5.14) Are poly tanks inspected periodically for structural soundness?	Poly tanks are inspected for crazing (spider webbing) and cracking in the spring and again at the end of the season. Damaged tanks are replaced or used for water.	Poly tanks are inspected periodically and replaced as necessary.	Tanks are not inspected regularly. High potential for tank failure is present.		
5.15) How long is liquid fertilizer stored on the farm?	Less than 60 days.	60 to 270 days.	More than 270 days.		

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.16) Is there secondary containment for liquid fertilizer stored on the farm?	All liquid fertilizer is stored with secondary containment.	Containers with greater than 2,500-gallon capacity or all containers located at a single site with a combined total capacity of greater than 7,500 gallons have secondary containment.	**Containers with greater than 2,500-gallon capacity or all containers located at a single site with a combined total capacity of greater than 7,500 gallons do not have secondary containment.**[19]	Satisfactory liquid fertilizer secondary storage containers, if required.	
5.17) What is the condition of storage tanks, hoses, valves and fittings used for liquid fertilizer?	Tanks, hoses, fittings and valves are in good condition, well maintained and ***compatible with the fertilizer being stored.***	Tanks, hoses, fittings and valves have some rust or signs of wear. Tanks previously used for underground petroleum storage are in good condition and in secondary containment.	Rusty, aged, worn, damaged or leaking storage tanks, hoses, fittings or valves **directly discharging to surface waters,**[4] or use of underground petroleum tanks without secondary containment.	Satisfactory condition of liquid fertilizer storage system.	
5.18) How are precipitation and clean-up leakage managed, if it occurs, in the on-farm liquid fertilizer secondary containment facility?	Leakage cleaned up immediately. Appropriate products are used to clean residual fertilizer off the surface of the secondary containment structure. Contained precipitation/fertilizer mixture spread on field at or below agronomic rate.	Spilled fertilizer recovered, but secondary containment surface not cleaned up after a spill or leakage.	Contained leakage not recovered. Leakage with accumulated precipitation **directly discharged in surface waters.**[4]	Satisfactory explanation of precipitation and leakage management in the secondary containment facility.	

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.19) How is leakage prevented when filling storage tanks, sprayers or mobile containers?	A permanent or temporary mix/load pad used during loading operations. Spills cleaned up immediately. Or, Fertilizer loaded in the field at different locations every time. Spills cleaned up immediately. Or, Dry couplers used to reduce spills and drips when loading liquid fertilizers. Spills cleaned up immediately.	Drips and leakage contained in buckets placed under couplers. Collected fertilizer reused. Spills cleaned up immediately.	No system in place to capture and prevent spills. Leakage from hose connections allowed to drain onto unprotected soils. **Spills not cleaned up.**[4]	Satisfactory explanation of tank filling procedures.	
5.20) If on-farm bulk liquid fertilizer storage requires secondary containment under Regulation 642, is it an operational pad or a closed containment system used?	An operational pad with 750 gal capacity measuring 10' by 20' minimum is in place. Fertilizer loading and unloading operations are supervised at all times.	No operational pad present; closed containment system (dry couplers, hoses under manufacturer warranty, anti-overflow devices, and 150 gal container under point of transfer) are in place. Fertilizer loading and unloading operations are supervised at all times.	**There is no operational pad or closed containment system for loading and unloading bulk fertilizer.**[19]	When required, an operational pad or closed containment system is present per Regulation 642: On-Farm Fertilizer Bulk Storage.	
5.21) How is backflow or back siphoning of fertilizer mixtures into the water supply prevented?	***Anti-backflow device installed,*** including a Reduced Pressure Zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and a 6 inch ***air gap maintained above the overflow level of the tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	Either an ***anti-backflow device installed,*** including a RPZ valve, double check valve assembly, or chemigation valve with an internal air gap installed, or 6 inch ***air gap maintained above the overflow level of the tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**Neither an anti-backflow device, including a RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, nor air gap maintained.**[1,4]	Anti-backflow device, including a RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or air gap present or demonstrated.	

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.22) What is done with excess fertilizer when field operations are complete?	Fertilizer applied to crop land at or below agronomic rate. Or, Excess fertilizer returned to dealer.	Excess fertilizer stored until next year.	Excess fertilizer applied to cropland without agronomic considerations. **Fertilizer dumped at farmstead or direct discharge to surface water.**[4]		
5.23) How are liquid fertilizer storage, transfer and application equipment cleaned out?	Fertilizer equipment rinsed on a containment pad or in field. Rinse water applied to crop land at or below agronomic rate.	Fertilizer equipment not rinsed.	Sprayer rinsed out at farmstead. **Rinse water dumped at farmstead or direct discharge to surface water.**[4]		
5.24) How far is the mixing and loading area from the water well? (Private wells include irrigation, livestock watering, cooling etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees). Use Table 1 in FAS107 for well type identification.	For private wells: • 150 feet or greater. OR, • With secondary containment 50 feet or greater. For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well, OR, • Approved isolation distance deviation for the well, OR, • Between 75 and 800 feet with approved storage and well, and protective site features.* For type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[3]	Appropriate mixing and loading area isolation distance for site characteristics.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.25) On the farmstead, how far is the mixing and loading area from surface water?	200 feet or greater.	Less than 200 feet, with appropriate security measures.	Less than 200 feet, without appropriate security measures	Appropriate mixing and loading area isolation distance from surface water.	
5.26) When not in use, where are planting and spray supply vehicles (trailers and trucks) parked to protect water resources from accidental fertilizer and pesticide spills and mischievous activities?	Supply vehicle returned to a secure location when not in use. Fertilizer and pesticides (including treated seed) properly stored more than 150 feet down gradient from any well.		Fertilizer and pesticide (including treated seed) supply vehicle left in an unsecured location. Or, Fertilizer and pesticides **stored less than 150 feet from any well.**[1]	Map showing where vehicles should not be parked adjacent. No evidence vehicles left in unsecure location.	

PETROLEUM PRODUCT STORAGE AND MANAGEMENT

THIS SECTION IS DESIGNED TO HELP MEET ENVIRONMENTAL CONCERNS RELATED TO PETROLEUM STORAGE.
IT IS NOT INTENDED TO REPRESENT ALL OF THE LEGAL REQUIREMENTS FOR STORAGE AND HANDLING OF PETROLEUM PRODUCTS ON THE FARM.

ALL PETROLEUM STORAGE FACILITIES

6.01) Are fuel storage tanks designed for the way they are being used and compatible with the material stored?	Each tank designed for the way it is being used and compatible with the material stored.		**Below-ground tank being used for above-ground petroleum storage, above-ground tank being used for under-ground petroleum storage or tank does not meet specifications for usage.**[16]	Fuel tanks used appropriately.	
6.02) Are fuel storage piping, secondary containment and related equipment designed for the way they are being used and compatible with the material stored?	Fuel storage piping and equipment are designed for the way they are being used and compatible with the material stored.		Fuel storage piping or equipment not designed for the way it is being used. **Below-ground piping on all under-ground tanks or above-ground tanks of greater than 1,100-gallon capacity not corrosion protected.**[16]	Fuel storage equipment appropriate for use.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.03) Are fuel tanks monitored for leaks and are leaks repaired?	Owner and operator ensure that releases do not occur.		Tank and piping not monitored and repaired on aboveground tanks equal to or less than 1,100 gallons capacity. **Tank and piping not monitored and repaired on all tanks greater than 1,100 gallons capacity.**[16]	No fuel leaks present.	
6.04) What design feature(s) does the fueling station have to prevent spills from entering the groundwater, surface water or subsurface soils?	Impermeable surface for fuel transfer such as concrete without cracks.	Compatible surface for fuel transfer such as asphalt for diesel fuel, sealed asphalt for gasoline, steel or other compatible liner material.	Incompatible surface, such as unsealed asphalt surface, for gasoline**.**	Impermeable surface or incompatible present for fuel transfer.	
6.05) Is the fill opening separate from the vent opening?	Yes.		**No.**[16]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.06) How far is the fuel storage from any water well? (Private wells include irrigation, livestock watering, cooling etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees.) Use Table 1 in FAS107 for well type identification.	For private wells: • 50 feet or greater for tanks less than 1,100 gallon-capacity with no secondary containment, OR, • 50 feet or greater for tanks greater than 1.100 gallon capacity or more with secondary containment. For Type III or Type IIb public wells: • More than 800 feet from the farm well, OR • Approved isolation distance deviation for the well, OR • No less than 75 feet for a Type IIB or III well if secondary containment, and site and well protective features are present.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 50 feet for most storage tanks.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well without an approved deviation, protection features or secondary containment.**[3]	Appropriate fuel storage isolation distance from water well.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.07) Does the tank have secondary containment?	Double-walled tank with continuous space between the two walls, tank in concrete vault or tank in diked area.	No secondary containment for tanks equal to or less than 1,100 gallons capacity.	No secondary containment when combined aboveground storage capacity is 2500 gallons (55-gallon containers or larger) **or an individual aboveground tank is greater than 1,100 gallons.**[16]		
6.08) If a combined aboveground petroleum storage capacity of greater than 2500 gallons (counting 55-gallon containers and greater) is present and could reasonably discharge into navigable waters of the United States, has a spill prevention control and counter-measure (SPCC) plan been developed?	Plan developed and copy present at farm facility.		**No plan.**[23]		
6.09) What is the maximum fuel storage capacity (in aggregate) on the farm?	48,000 gallons or less of gasoline or 80,000 gallons or less of diesel in UL 142 single- or double-walled tanks.		**Greater than 48,000 gallons of gasoline or 80,000 gallons of diesel in UL 142 single or double wall tanks.**[16]		
6.10) Does each tank's fill opening have a lockable closure?	Fill pipe equipped with lockable closure.		**No lockable closure on fill pipe.**[16]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.11) How far is the tank from a storm drain, surface water or designated wetland?	Tank is more than 50 feet away or has some other engineering control present that would control or divert a spill from reaching a storm drain, surface water or designated wetland.		**Tank 50 feet or less.**[16]	Appropriate fuel storage isolation distance from surface water.	
6.12) For tanks <1,100 gallons, how far is the (non-fire protected) tank from buildings and property lines?	- More than 40 feet from a building or a structure.		**- Located inside a building.** **- 40 feet or less from a building, or a structure.**[16]		
6.13) How many tanks (equal to or less than 1,100 gallons are at each site at one facility?	3 or fewer.	More than 3.			
6.14) How far apart are fueling sites at the facility?	100 feet or greater.	Less than 100 feet.			
6.15) Are the portable fueling tank and transfer system adequate to reduce risk of environmental contamination?	UL-approved tank and adequate fueling system.	Adequate portable fueling system that reduces risks.	Inadequate portable fueling system that poses risk of environmental contamination.	Adequate portable fueling	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL ABOVEGROUND PETROLEUM STORAGE FACILITIES					
6.16) Do mobile fuel tanks meet the Federal Hazardous Materials Regulations (FHMR) and USDOT specifications?	Yes, the mobile fueling system meets the FHMR including USDOT specifications or USDOT specifications do not apply because the tank is less than 502 gallons and only goes from farm to field and is properly secured and free from leaks.		No. The tank poses an environmental risk.	Meeting USDOT specifications includes having shipping papers, tank markings and placards. See FAS 112S.	
6.17) Is the tank labeled according to its contents with letters three inches or more in height?	Yes, labeled according to contents (Gasoline or Diesel) and with the following: "FLAMMABLE" (OR "COMBUSTIBLE") and "KEEP FIRE AND FLAME AWAY". If tank is not a fire-protected type, it is also labeled: "KEEP 40 FEET FROM BUILDINGS."		**Tank labeled with contents. Tanks storing gasoline not labeled: FLAMMABLE - KEEP FIRE & FLAME AWAY. Tanks storing diesel not labeled: COMBUSTIBLE – KEEP FIRE & FLAME AWAY.**[16]		
6.18) Is the tank elevated off the ground to protect from corrosion?	Tank stably mounted on solid timbers, solid cement blocks, manufactured cradles or equivalent to protect the tank bottom from corrosion due to contact with ground. The tank is elevated to allow for a visible inspection of all tank surfaces.		**Tank is not stably elevated in order to allow adequate visible inspection of all tank surfaces.**[16]	Appropriate tank elevation.	
6.19) Are siphons, manifolds or internal pressure discharge devices present on tank(s)?	Siphons not present on tank(s). Multiple tanks not connected together (no manifold). No internal pressure discharge device present.	Manifold(s) present on tanks installed prior to 2003. After 2003, tanks equipped with a shut off valve for each tank, a spill bucket and audible overfill alarm may have top only manifolds.	**Siphons or internal pressure discharge device(s) present on tanks installed after 2003.**[16]	No siphons or internal pressure discharge devices present. No manifolds present on tanks installed after 2003 Unless additional protection factors are present.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL ABOVEGROUND PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.20) Is the tank dispenser (top-opening tank) or discharge connection (gravity discharge tank) made inoperable when not in use?	Yes, locked or otherwise made inoperable.		**No.**[16]		
6.21) Does the top-opening tank pump discharge or gravity discharge tank have a self-closing nozzle?	Yes.		**No.**[16]		
6.22) If a single-walled tank is in a dike with rain protection, is the roof or canopy and supports constructed of non-combustible material and designed so vapors don't collect?	Yes.		**No, combustible materials used or design is such that vapors collect under the roof or canopy.**[16]		
6.23) If the tank is covered, are roof and canopy supports located on edge of dike or outside diked area?	Yes.		**No.**[16]		
6.24) If the tank is covered, is the lowest elevation of the roof or canopy six feet or higher above the top of the tank?	Yes.		**No.**[16]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL ABOVEGROUND PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.25) If the tank is covered, does the normal tank vent extend through the roof or canopy?	Yes.		**No.**[16]		
ALL ABOVEGROUND PETROLEUM STORAGE TANKS >1,100 GALLON CAPACITY					
6.26) Is the tank registered and is valid proof of registration displayed?	The above-ground storage tank with capacity greater than 1,100 gallons is registered, and valid proof of registration is available.	For above-ground storage tanks with a capacity greater than 1,100 gallons, but less than 3,000 gallons **the tank is not registered, or valid proof of registration is not available,** but an inspection finds it meets all applicable boxed MAEAP [16] requirements in the Petroleum Products Storage and Management Section.	**The tank is not registered and/or the tank does not bear a UL tag, and/or valid proof of registration is not available.**[16]	Aboveground storage tank is registered or there are minimal environmental risks.	
6.27) Does tank fill pipe have spill protection?	Spill protection (catch basin) installed and maintained on tank fill pipe.		**Tank fill pipe does not have spill protection.**[16]	Catch basin installed on fuel tank.	
6.28) Is there an emergency control disconnect for electrically operated fuel systems?	Emergency control disconnect located 20 to 100 feet away from dispensing area.		**No emergency control disconnect present.**[16]	Appropriate disconnect control present.	
6.29) Are there absorbent materials, a container with lid and a non-metallic shovel to deal with a petroleum spill?	Spill kit present.		**No spill kit.**[16]	Spill kit present.	
6.30) Does the tank have an audible alarm?	Yes, audible alarm is present.				

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL ABOVEGROUND PETROLEUM STORAGE TANKS >1,100 GALLON CAPACITY (CONTINUED)					
6.31) Does the tank have secondary containment?	Double walled tank or tank within diked area.		**No secondary containment.**[16]	Appropriate secondary containment.	
6.32) How far is the tank from buildings, property lines and public ways?	From Bldg. / From lot line / From public way		**Less than distance indicated for type of tank.**[16]		
In-vault tank up to 15,000 gallons:	0 feet / 0 feet / 0 feet				
Protected aboveground tank (UL 2085 tank) 6,000 gallons or less:	5 feet / 15 feet / 5 feet				
UL 2085 tank 6,000 to 12,000 gallons or less:	15 feet / 25 feet / 10 feet				
UL2080 tank 0-12,000 gallons:	25 feet / 50 feet / 25 feet				
Other secondary containment tank up to 12,000 gallons:	50 feet / 100 feet / 50 feet				
6.33) Is there a fence to prevent unauthorized entry?	Tank or property fenced or tank within vault with entry protected from unauthorized entry or vandalism.		**Unprotected from unauthorized entry.**[16]		
6.34) Is there crash protection for the tank and piping?	Guard posts or appropriate barrier installed for crash protection.		**No crash protection.**[16]	Crash protection present for fuel tank.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL ABOVEGROUND PETROLEUM STORAGE TANKS >1,100 GALLON CAPACITY (CONTINUED)					
6.35) Is the tank labeled according to its contents with letters three inches or more in height?	Yes, labeled according to contents (Gasoline or Diesel) and with the following "FLAMMABLE (or COMBUSTIBLE) LIQUIDS" and "KEEP FIRE AWAY."		**Tank not labeled.**		
6.36) Are there any unused fuel storage tanks on the farm?	If aboveground tank present, it has been emptied, cleaned of liquid and sludge, rendered vapor free and safeguarded from trespassing.		**Aboveground tank present and not empty, clean and/or vapor free. Tank fill opening not secured to prevent trespassers from putting chemicals in tank.**[16]		
UNDERGROUND STORAGE TANKS					
6.37) Has the underground fuel tank (installed before August 1, 2003 with a capacity of less than 1,100 gallons) been tested for leaks within the past three years?	No leaks detected.		No testing.	Appropriate report indicates no leaks present.	
6.38) Does the underground storage tank (installed after August 1, 2003 with a capacity of less than 1,100 gallons) meet Flammable Liquid Combustible Liquid (FLCL) rules?	Leak detection system in place. Tank has corrosion protection, spill bucket installed and overflow prevention in place (alarm or shutoff valve).		**FLCL rules not met.**[16]	Tank meets FLCL rules.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
UNDERGROUND STORAGE TANKS (CONTINUED)					
6.39) Do tank(s) or piping that are in contact with the soil have corrosion protection on all parts?	Properly engineered, installed, maintained and inspected (every three years) corrosion protection provided for tank, piping or portions in contact with the soil.		**Tank or piping in contact with soil without corrosion protection or unmaintained protection. Not inspected at least once every three years.**[16]		
6.40) Are there any unused fuel storage tanks on the farm.	If tank present, it has been emptied, cleaned of liquid and sludge, rendered vapor free and safeguarded from trespassing.		**Tank present and not empty, clean and/or vapor free. Tank fill opening not secured to prevent trespassers from putting chemicals in tank.**[16]		
6.41) Is the underground tank registered, and is valid proof of registration available?	The underground storage tank with capacity greater than 1,100 gallons is registered and proof of registration is present.		**The tank is not registered, and/or proof of registration is not present.**[16]	Underground storage tank is registered.	
6.42) If there is an underground fuel storage tank (UST) greater than 1,100 gallons on the farmstead is there a State of Michigan certified operator for the farm?	Yes.		**No.**[16]		
6.43) Did a professional (trained and certified by the tank manufacturer) install the tank?	Professional installation.		**No.**[16]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
UNDERGROUND STORAGE TANKS (CONTINUED)					
6.44) Is there insurance or demonstration of financial responsibility should there be a fuel release?	Yes, meet the $500,000 financial responsibility level for tanks less than 10,000 gallons.		**Unable to demonstrate financial responsibility for third party injury and property damage due to accidental release.**[16]		
6.45) Are there any unused underground fuel storage tanks on the farm?	No, tanks have been removed from the ground and the site. Excavation site checked for evidence of contamination (site assessment). Any contamination present was properly handled.	Underground tanks have been removed or filled with inert solid material. A site assessment has not been completed.	**In-ground tank has been left unused for 12 months. Tanks greater than 1,100 gallons have been removed or filled with inert material but a site assessment has not been completed.**[16]	Proper management of an unused underground fuel storage tank(s).	
OTHER PETROLEUM PRODUCT STORAGE					
6.46) Is the heating oil tank for a farm building being used as designed?	Tank is labeled and used as designed.	Tank is not labeled and used outdoors.	Tank is not being used as designed.	Heating oil storage tank is appropriate.	
6.47) Is a heating oil tank being used to store diesel fuel?	Yes, but tank is labeled as a UL 80 tank and is being used as designed.		Tank is not labeled or is not being used as designed.	Diesel fuel storage tank is appropriate.	
6.48) How far is the home heating fuel or kerosene tank from a building?	Minimum of 5 feet from the building.		Less than 5 feet.		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
OTHER PETROLEUM PRODUCT STORAGE (CONTINUED)					
6.49) How far is the fuel tank for the emergency generator from any well?	For private and public wells: Close proximity to the well if the emergency generator provides power to the well in the event of a power outage, and the fuel is in secondary containment. If the emergency generator is not used to run the well, standard well isolation distance criteria applies.		The emergency generator does not run the well and does not meet standard well isolation distance: For private wells: **Less than 50 feet for most fuel tanks.**[1] For public wells: **Less than 800 feet from the well without an approved deviation, protection features or secondary containment.**[3] **Less than 75 feet with fuel in secondary containment.**[1,3]	Acceptable fuel storage isolation distance from water.	

WASTE MANAGEMENT

7.01) How are household waste and waste generated at the farm managed?	All waste recycled or disposed of in a licensed solid waste facility or incinerator.		Household waste burned on site (if allowed by local government). **Farm waste burned on site.**[9]		
7.02) Is there a farm dump?	No farm dump or farm dump property cleaned up and closed.	Farm dump exists but is not being used.	Farm dump still in use.		

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WASTE MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
7.03) If a household trash burn barrel or incinerator exists, how are ashes disposed of?	Ashes collected and disposed at a licensed landfill.	Ashes stored or disposed on the farm more than 300 feet from a well or surface water.	Ashes stored or disposed on the farm within 300 feet of a well or surface water.		
7.04) How are hazardous product containers (treated seed packages, fertilizer bags, chemical containers, etc.) disposed of?	Recycled or reused appropriately. Or, Disposed at a licensed landfill, or hazardous waste collection service used, or returned to the dealer.		**Empty and partially filled containers burned or disposed on the farm.**[9]		
7.05) How is waste oil disposed?	Recycled.	Burned in waste oil heater or furnace.	**Dumped on the farm**.[8]	Evidence of proper oil recycling or disposal.	
7.06) How is used antifreeze disposed?	Recycled.	Disposed of in municipal sewer (with municipality's approval).	**Dumped on the farm.**[8]	Evidence of proper antifreeze recycling or disposal.	
7.07) How are scrap tires disposed?	Recycled.		**Disposed on the farm.**[12]		
7.08) How are lead- acid batteries disposed?	Recycled.		**Disposed of** or stored **on the farm**.[8]	Evidence of proper battery recycling.	
7.09) How are paints, solvents, and cleaners disposed?	Used up, taken to household hazardous waste collection or recycled.	Liquid evaporated in open air, sludge taken to licensed landfill.	**Burned or disposed of** or stored **on the farm.**[8]	Evidence of proper recycling or disposal.	

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WASTE MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
7.10) How far from water wells are hazardous products stored? (Private wells include irrigation, livestock watering, cooling, etc.) (Type IIb and Type III Public wells include that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees). Use Table 1 in FAS107 for well type identification.	For private wells: 150 feet or greater. OR, With secondary containment, 50 feet or greater. OR, For public wells (dairy farms or farms with employees): More than 800 feet from the farm well. OR, Approved isolation distance deviation for the well. OR, Between 75 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For Type IIb or Type III public wells: **Less than 800 feet from the farm well.**[3]		
7.11) Are used motor oil, new oil and hydraulic oil stored in acceptable containers and properly isolated from drinking water wells?	Oil in acceptable containers stored on impermeable floor or in secondary containment, and with reasonable isolation from any well and does not discharge to surface water.	Oil stored in acceptable containers, but with inadequate isolation from any well and does not discharge to surface water.	Oil stored in leaking containers. Evidence of oil soaking into the soil and/or **discharge to surface water.**[4]	Acceptable oil storage demonstrated.	
7.12) Are there any storage tanks being used to store motor oil, new oil, hydraulic oil, or any other petroleum product underground?	There are no storage tanks in use underground.	Yes. The tanks meet all the applicable underground storage tank standards found in the Petroleum Product Storage and Management section of the Farm*A*Syst (FAS107).	**Yes. But the tank does not meet the standards found in the Petroleum Product Storage and Management section of FAS 107.**[16]		

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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WASTE MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
7.13) Are floor drains present in farm buildings?	No floor drains. Or, all drains go to an appropriate system designed for the materials drained.	Floor drains are made inoperable except when used for appropriate materials, or materials are stored in secondary containment to prevent leaks from entering drain.	**Floor drains are discharged to surface water,**[4] are vulnerable to spills, or **drain hazardous materials to inappropriate systems.**[4]	Quantities of hazardous materials stored in secondary containment or floor drains plugged to prevent spills or major losses from entering the drain.	
7.14) Is there a mercury manometer on the farm?	No mercury manometer.		Mercury manometer present.	No mercury manometer gauges on the farm.	
7.15) Are there mercury-containing devices on the farm? (Examples include fluorescent lights, thermostats, thermometers, irrigation switches, septic lift station switches and other switches.)	No.	Some mercury-containing devices In use, proper disposal methods used when replaced.	Yes, many mercury-containing devices.	Examples: Recycling center or returned to retailer.	

SEPTIC SYSTEM MANAGEMENT

8.01) Is the farm bathroom connected to a septic system to treat the waste?	Farm bathroom is connected to a septic tank and drainage field, or to another system approved by the Local Health Department.		**Sewage added to manure or building pit.**[17] **No septic system. Direct discharge of wastes to environment.**[4]	If there is a farm bathroom, it must be connected to a functioning septic system. Human waste must not be added to livestock manure storage.	

NOTE: WHEN THERE IS A SEPTIC SYSTEM FOR THE BATHROOM IN THE FARM BUILDING, COMPLETE THE REMAINDER OF THIS SECTION FOR BOTH THE FARM BUILDING AND HOUSE SEPTIC SYSTEMS. IF NOT, COMPLETE IT FOR THE HOUSE SEPTIC SYSTEM.

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SEPTIC SYSTEM MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
NOTE: WHEN THERE IS A SEPTIC SYSTEM FOR THE BATHROOM IN THE FARM BUILDING, COMPLETE THE REMAINDER OF THIS SECTION FOR BOTH THE FARM BUILDING AND HOUSE SEPTIC SYSTEMS. IF NOT, COMPLETE IT FOR THE HOUSE SEPTIC SYSTEM.					
8.02) Is the septic system adequately sized to treat wastewater generated in the house?	Septic system designed to handle more wastewater than required, based on the number of bedrooms in house and soil characteristics.	Capacity just meets wastewater requirement.	Design capacity is much less than potential flow of wastewater. Or, No septic system; **direct discharge of wastes to environment.**[4]		
8.03) What is the age of the septic system?	Less than 5 years old.	6 to 20 years old.	More than 20 years old.		
8.04) What distance separates the septic system components from water wells?	Greater than 50 feet from private wells (75 feet from public wells, including dairy farms and farms with employees).		**Less than 50 feet from a private well(s) (less than 75 feet from public wells, including dairy farms and farms with employees.)**[3]		
8.05) When was the last time the septic tank was pumped out?	Within the past 5 years.	Between 5 and 10 years.	More than 10 years ago.		
8.06) Who pumps out the septic tank?	Licensed septage hauler.		**Farmer/self or unlicensed contractor.**[10]	Satisfactory explanation of tank pumping procedures.	
8.07) How is the drain field protected from traffic, deep-rooted plants (like crops) and structures?	Vehicles and other heavy objects or activities kept away from drain field area. No deep-rooted plants, pavement or structures over the drain field.		Vehicles, livestock, heavy objects or other disturbances permitted in area. Trees planted in or directly next to the drain field.		
8.08) Are there any signs of trouble with the septic system?	Household sanitary drains flow normally. No sewage odors inside or outside. Soil over drain field firm and dry. Well water tests negative for coliform bacteria.	Household drains run slowly or soil over drain field is sometimes wet.	Sewage odors noticed in the house or near the drain field. Drains plugged or backed up. Soil wet or spongy in the drain field area. Well water tests positive for coliform bacteria.		

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SEPTIC SYSTEM MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
NOTE: WHEN THERE IS A SEPTIC SYSTEM FOR THE BATHROOM IN THE FARM BUILDING, COMPLETE THE REMAINDER OF THIS SECTION FOR BOTH THE FARM BUILDING AND HOUSE SEPTIC SYSTEMS. IF NOT, COMPLETE IT FOR THE HOUSE SEPTIC SYSTEM.					
8.09) What records are maintained on the septic system?	Good map and records of system repairs and maintenance are kept.	Some records maintained.	No map and maintenance records kept.		
8.10) How frequently is the septic system used for grease and solid waste disposal from the kitchen?	Solid kitchen waste and grease are not disposed of in the septic system.	Moderate use of the septic system for solids and grease disposal from the kitchen.	Frequent use of the septic system for solids and grease disposal from the kitchen.		
8.11) What kinds farm cleaners, solvents and other chemicals are poured down the drain?	Moderate use of cleaning products that end up in wastewater. Hazardous chemicals never poured down the drain or toilet.	Moderate use of cleaning products. Small amounts of hazardous chemicals poured down drain or toilet.	Heavy use of cleaning products. **Septic system used to dispose of hazardous chemicals (solvents, degreasers, acids, oils, paints, disinfectants, pesticides).**[4]		
8.12) How is water conserved in the household?	Water-conserving fixtures and practices used. Drips and leaks fixed immediately.	Some water-conserving steps taken (low-flow shower heads, fully loaded washing machine or dishwasher).	No water-conserving practices. High-volume standard bathroom fixtures used. Leaks not repaired.		
8.13) How is the water softener recharge handled.	Underground drainage separated at least 50 feet from well and septic systems (75 feet from the farm well for greenhouse with employees or open to the public).	Open ditch, farm field drain.	Septic system.		
8.14) How are discharges from footer drains, basement sumps and roof drainage handled?	Grassed area, open ditch, field drain.		Directed into the septic system.		

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General Livestock Management

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
9.01) If the farm has 50 Animal Units (AU) or more, was the Michigan Right to Farm GAAMP for Site Selection and Odor Control for New and Expanding Livestock Facilities (Site Selection GAAMPs) used to site new or expanding livestock production facilities constructed after January 1, 2017?*	Farm has built new or expanded since January 1, 2017 and has Michigan Department of Agriculture and Rural Development (MDARD) ***Site Selection GAAMPs*** verification. MDARD verification is required for sites housing 50 AU or greater in Category 1 and Category 2 locations.		The farm has built new or expanded since January 1, 2017, and does not meet all of the ***Site Selection GAAMPs***, or the determination has not been made.	Consistent with Site Selection and Odor Control GAAMPs.	
9.02) If the farm has 50 Animal Units (AU) or more, was the Michigan Right to Farm GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Facilities (Site Selection GAAMPs) used to site new or expanding livestock production facilities constructed after June 1, 2000 and prior to December 31, 2016?*	Farm has Michigan Department of Agriculture and Rural Development (MDARD) ***Site Selection GAAMPs*** verification. MDARD verification is required for sites housing 500 AU or greater in a Category 1 location or 250 AU or greater in a Category 2 location. The farm has built new or expanded between 2000 and 2016 to house between 50 and 499 AU in a Category 1 location or between 50 and 249 AU in a Category 2 location and the producer submitted the Siting checklist to MDARD for an informal review and MDARD determined the site meets all of the ***Site Selection GAAMPs.***	The farm has built new or expanded between 2000 and 2016 to house between 50 and 499 AU in a Category 1 location or between 50 and 249 AU in a Category 2 location and the producer used the Siting checklist and the producer determined the site meets all of the ***Site Selection GAAMPs.***	The farm has built new or expanded since 2000 and does not meet all of the ***Site Selection GAAMPs***, or the determination has not been made	Consistent with Site Selection and Odor Control GAAMPs	

* These questions do not apply to farms where siting is not applicable, such as farms located in municipalities with populations greater than 100,000 where a zoning ordinance has been enacted to allow for agriculture. In addition, siting does not apply to research and educational institutions, or other locations as determined by MDARD.

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GENERAL LIVESTOCK MANAGEMENT (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK - 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
9.03) If the farm has less than 50 Animal Units, was the Michigan Right to Farm Site Selection GAAMP used to determine the site category for facilities constructed after June 1, 2000?*	The farm proactively achieved verification under the ***Michigan Right to Farm Site Selection GAAMPs.***	Land use zoning allows for agriculture or the location has been determined to be a Category 1, 2, or 3 site and is not required to complete the ***Site Selection GAAMPs*** verification process.	The farm has been determined to be a Category 4 location and is not eligible for MAEAP Livestock or Farmstead verification.	Zoning map or zoning use description provided or category determination provided by MDARD. (See FAS 112S)	
* These questions do not apply to farms where siting is not applicable, such as farms located in municipalities with populations greater than 100,000 where a zoning ordinance has been enacted to allow for agriculture. In addition, siting does not apply to research and educational institutions, or other locations as determined by MDARD.					
9.04) Is there a utilization plan for the manure nutrients generated on the farm?	Total nutrient production is known, and sufficient crop acres available to use manure nitrogen and phosphorus safely. ***Manure applications discontinued if the soil phosphorus test reaches 300 pounds per acre (150 ppm) of Bray P1 phosphorus.*** Or other utilization plan safely uses manure nutrients.		Manure nutrient production is unknown, or nutrient production exceeds land capacity, or no plan exists for manure utilization.		
9.05) What manure management records are maintained?	Complete application ***records of manure analysis, soil test results and rates of manure application for individual fields are maintained.***	A minimum of one season of manure application records, or partial manure application records have been kept.	Minimal or no records maintained.		

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GENERAL LIVESTOCK MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
9.06) Is there an emergency plan in place in the event of a manure spill?	Up-to-date written plan available and understood by all farm employees. ***All uncontained spills or releases should be reported to the MDARD Agriculture Pollution Emergency Hotline: 1-800-405-0101,*** or to the MDEQ Pollution Emergency Alerting System: 1-800-292-4706.	Incomplete or out-of-date action plan available.	No emergency action plan that deals with manure spills.	Up-to-date emergency farm plan.	
9.07) How are animal mortalities handled?	Animals are buried, incinerated (requires permit), land filled, placed in a compost pile or picked up by a rendering service within 24 hours of death or stored for a maximum of seven days at 40 degrees F or a maximum of 30 days at 0 degrees F before proper disposal of the carcass.		**Animals are not buried, incinerated, land filled, placed in a compost pile or picked up by a rendering service within 24 hours of death. Or, stored for more than seven days at 40 degrees F or more than 30 days at 0 degrees F before disposal of the carcass.**[15]	Disposal of dead animal bodies is done according to the Bodies of Dead Animals Act (BODA), as amended in 2008. Up-to-date forms on file for verification. (See FAS 112S)	
9.08) How are animal healthcare needles and syringes disposed?	Sharps are put into a puncture-resistant container, labeled and taken to licensed landfill.		**Disposal at landfill without protective containment, or disposed of on the farm.**[2]	Use of labeled, puncture-proof container for sharps.	
9.09) How are unwanted or unusable animal medications and healthcare products disposed?	Taken to licensed landfill, veterinarian, or distributor for disposal.		**Flushed down the drain, dumped on the farm or dumped in the manure pit.**[4]		
9.10) Do livestock waterers have backflow prevention to protect the well from contamination?	All waterers have backflow prevention built into the waterers or in the water line to the waterers, or an air gap.	Most waterers have backflow prevention.	**No backflow prevention for livestock waterers.**[1]	Backflow prevention on livestock waterers.	

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General Livestock Management (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk - 1 (significant hazard)	Records or evidence for MAEAP verification	Your Risk
9.11) Do rain, snow (including plowed snow) roof water or surface water come into contact with manure, compost, feed/silage, livestock lots or travel lanes resulting in contaminated runoff?	There is no clean water contact with the listed areas, or **contaminated runoff** is ***collected or treated*** and does not discharge directly to surface water.		Areas are exposed to rain/snow or surface water, and runoff is not collected or treated. **Runoff discharges directly to surface water**.[4]	Visual inspection of the farmstead. Flow patterns are most apparent during or shortly after a rainfall event and/or thaw.	

Livestock Manure Storage

10.01) How far is the liquid manure storage from any well? (Private wells include irrigation, livestock watering, cooling etc. Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees) Use Table 1 in FAS107 for well type identification.*	For private wells: • 150 feet or greater For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well, OR, • Approved isolation distance deviation from the Local Health Department for the well, OR, • Between 200 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[3]	Appropriate well isolation distance for site characteristics.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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LIVESTOCK MANURE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
10.02) How far is the dry manure storage from any well? (Private wells include irrigation, livestock watering, cooling etc. Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees) Use Table 1 in FAS107 for well type identification.*	For private wells: • 150 feet or greater OR • 50 feet or greater, for covered facility with protective site features, with an MDARD review. For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well, OR, • Approved isolation distance deviation from the Local Health Department for the well, OR, • Between 200 and 800 feet with approved storage and well, and protective site features.* • 75 feet or greater for covered facility with protective site features, with MDARD review.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[3]	Appropriate well isolation distance for site characteristics.	
LIQUID MANURE STORAGE SYSTEMS					
10.03) Are structures properly maintained?	Structure is properly maintained and in good condition. No damage to the liner or breaches evident. No visible signs of issues with push-off ramps, load-out areas, pumps, piping, etc.	Structure appears to be in good condition.	Lining material integrity broken. Evidence of overflow. Coarse-textured soils, no clay liner. Evidence of extensive cracking, leaning, etc. Structure needs repair.	MAEAP manure storage review sheets completed. (See FAS 112S). Additional criteria may be required for CNMP development.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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LIVESTOCK MANURE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
LIQUID MANURE STORAGE SYSTEMS (CONTINUED)					
10.04) What design standards are utilized for liquid storage structures?	As-built documentation is available. ***Construction design for manure storage and treatment facilities meets standards and specifications in accordance with MI NRCS-FOTG, Concrete Manure Storages Handbook (MWPS-36), Circular Concrete Manure Tanks publication TR-9 (Midwest Plan Service, 1998)***. For steel: Manual of Steel Construction, American Institute of Steel Construction. For concrete: Building Code Requirements for Reinforced Concrete, ACI 318, American Concrete Institute. For earthen storage, the permeability of the earthen liner is known and the earthen storage meets NRCS standard 313: Waste Storage Facility. No evidence of overflow.	Storage was designed and built by professionals, but the as-built design standards are unknown. The storage structure meets the requirements as outlined in Extension Bulletin FAS112S.	Storage was designed and built without engineering standards.	Appropriate manure storage design and installation demonstrated. Completed MAEAP manure storage review sheets or as-built engineering standards available. (See FAS 112S)	
10.05) How is freeboard maintained and overflow prevented in storage structures?	Minimum freeboard is known and observed. ***A minimum freeboard of 12 inches (6 inches for fabricated structures) plus the additional storage volume necessary to contain the precipitation and runoff from a 25-year, 24-hour storm event.*** Freeboard markers are in place.	No evidence of manure overflowing storage. Safe freeboard level is known but not visibly marked. Freeboard not always maintained.	Evidence that manure overflowed the storage structure. Freeboard level is unknown and unmarked.	Appropriate manure storage management demonstrated. Safe freeboard level indicated on storage. Runoff is calculated.	
10.06) Is clean water (i.e. roof and surface runoff) diverted away from the manure storage facility?	Clean water is diverted away from the manure storage.	Clean water is not diverted, but storage is designed to accommodate the additional water while still maintaining the freeboard.	Potential exists for overflow of manure storage.	Appropriate manure storage management demonstrated. Clean water diverted from manure storage.	

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LIVESTOCK MANURE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
SOLID-BEDDED MANURE STORAGE SYSTEMS					
10.07) At the farmstead, where is manure temporarily stored?	***Manure is temporarily stacked on an impermeable pad with sides.*** Runoff does not flow onto neighboring property or into surface waters.	***Manure is temporarily stacked on the ground with appropriate management to minimize leaching and prevent runoff flow onto neighboring property or into surface waters – such as rotating locations, complete periodic removal of manure, seeding of previous location and records documenting location used.***	Manure is temporarily stacked on the ground without appropriate management to minimize leaching and prevent all runoff such as rotating locations, complete periodic removal of manure, seeding of previous location and records documenting location used. For example: manure is stacked in the same location every year, piles are located within 50 feet of surface water, and/or there is evidence that **manure-contaminated runoff flows to surface water** [4] or to adjacent property.	Appropriate temporary manure stacking demonstrated at the farmstead for surface water and groundwater protection.	
10.08) How far are the buildings with bedded packs from a well?	Isolation distance is maximized to the extent possible but is not less than 75 feet for public wells and 50 feet for private wells.		For public wells: **Less than 75 feet.**[1] For private wells: **Less than 50 feet.**[1]	Appropriate well isolation distance for the type of well (public or private) or approved health department deviation for well isolation.	
10.09) At the farmstead, what management practices are used to reduce odors and pests from outside manure stockpiles?	***Stockpiled manure is at least 50 feet away from property lines or 150 feet away from non-farm homes and stockpiled manure is covered with a tarp, fleece blanket, straw, woodchips or other materials or additives to reduce odors and pests.***	***Stockpiled manure is at least 50 feet away from property lines or 150 feet away from non-farm homes or stockpiled manure is covered with a tarp, fleece blanket, straw, woodchips or other materials or additives to reduce odors and pests.***	Stockpiled manure is closer than 50 feet to property lines or 150 feet to non-farm homes and stockpiled manure is not covered. No additives are used to reduce odors and pests.	Appropriate temporary manure stacking demonstrated at the farmstead.	

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LIVESTOCK MANURE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
SOLID-BEDDED MANURE STORAGE SYSTEMS (CONTINUED)					
10.10) At the farmstead, what management practices are used to reduce odors and pests from outside temporary stacks or solid manure storage structures.	Less than 90 days. Stacked in different locations each time.	More than 90 days, but ***less than 365. Stacked in different location each time.***	365 days or more. Stacked in same location each time.	Manure not stacked for more than 365 days.	
10.11) How far away is the well from temporary manure stockpiling or transfer areas?	Isolation distance is maximized to the extent possible but is not less than 75 feet for public wells and 50 feet for private wells.		**Isolation distance is less than 75 feet for public wells and 50 feet for private wells.**[1,3]	Appropriate well isolation distance for the type of well (public or private) or approved health department deviation for well isolation.	
10.12) At the farmstead, how are solid manure storage structures designed and constructed?	Constructed with a floor of concrete, or equivalent material, and with walls that prevent leachate from entering surrounding soils. Roof or cover prevents rainfall from entering storage.	Constructed with floor of compacted asphalt or fine- or medium-textured soils. Leachate will have direct contact with earthen floor or side walls. The permeability of the earthen floor is known and the earthen floor meets NRCS Standard 313. Leachate and rainfall/snowmelt runoff discharged into a designed system.	Earthen floor constructed with coarse-textured soils. Rainfall and leachate will have direct contact with earthen floor or sidewalls. Runoff and leachate are uncontrolled and **discharge directly to surface water.**[4]	Appropriate manure storage design and management for leachate/runoff.	
10.13) How are animal facilities with bedded manure packs designed and constructed?	Constructed with a floor of impermeable material or fine-textured soil. Adequate bedding is provided to maintain solid nature of manure. No rainfall or runoff enters the manure area. No waterers in the building.	Medium- to fine-textured soils, limited bedding provided, some rainfall or runoff enters manure area. Waterers in the building.	Building has an earthen floor on coarse-textured soil. **Contaminated runoff discharges directly to surface water.**[4]	Appropriate manure storage design and management for leachate/runoff.	

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LIVESTOCK MANURE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
SOLID-BEDDED MANURE STORAGE SYSTEMS (CONTINUED)					
10.14) Is runoff from manure storage area(s) directly discharging to surface or groundwater?	***Provisions made to control and/or treat runoff from stored manure.*** A designed and maintained vegetative infiltration area or runoff storage basin effectively handles storage runoff.	Inadequate runoff control. Signs of manure runoff past perimeter of vegetated area or exceeding storage basin capacity.	**Manure storage runoff discharges directly to surface water.**[4]	Appropriate runoff control from manure storage area(s).	

LIVESTOCK LOT MANAGEMENT

11.01) How far is the livestock lot located from any well? (Private wells include irrigation, livestock watering, cooling etc.)	50 feet or more from private wells (75 feet from public wells including the farm well for dairies or farms with employees).		**Less than 50 feet from private wells**[1] **(less than 75 feet from public wells including the farm well for dairies or farms with employees).**[4]	Appropriate livestock isolation distance from water well(s).	
11.02) How far is the livestock lot from surface water?	Livestock lot is more than 300 feet from surface water and, ***runoff control protects neighboring land areas and prevents direct discharge to surface waters or groundwater.***	Livestock lot is less than 300 feet from surface water and, ***runoff control protects neighboring land areas and prevents direct discharge to surface waters or groundwater.***	**Evidence that manure-contaminated runoff flows from lot to surface water or to adjacent property.**[4]	Appropriate livestock isolation distance from surface water.	
11.03) What efforts are made to divert unwanted drainage from upslope watersheds and roof water from becoming contaminated with manure?	***Provisions are made to collect, store, utilize and/or treat manure accumulations and contaminated runoff from outside open lots used for raising livestock.*** Clean runoff is diverted away from the livestock lot.	Most roof water and upslope watershed drainage are diverted around livestock lot. Water that contacts manure is treated or contained and applied to cropland.	No clean water system in place. Most roof water and upslope watershed drainage runs through lot.	Appropriate clean water management for livestock lot(s).	

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LIVESTOCK LOT MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
11.04) How is livestock lot runoff managed to protect surface water, groundwater and/or neighboring properties?	All lot runoff is directed to a properly designed and maintained runoff storage basin, or runoff is directed to a designed settling basin and vegetated infiltration area where vegetation is annually harvested. ***No evidence of runoff to surface water, groundwater and/or neighboring properties,*** or ponding in low areas.	***No evidence of runoff flow to surface water*** or ponding in low areas. Vegetation or cropland that is annually harvested exists between lot and surface water.	Evidence of runoff **discharging directly to surface water**[4] or intermittent waterway.	Appropriate runoff control for livestock lot(s).	
11.05) How often is manure scraped and removed from livestock lots?	***Manure is scraped and removed periodically from livestock lot*** or other heavy use areas.		Manure is seldom scraped and removed from lot and feeding and watering areas.	Appropriate manure management in livestock lot(s).	
11.06) What type of floor or base does the livestock lot have?	Properly maintained concrete or compacted asphalt.	Continuous-use, compacted dirt or compacted gravel. Minimal plant material growing.	Poorly compacted dirt or gravel layer as indicated by plant growth.	Appropriate floor or base in livestock lot(s).	

SILAGE STORAGE

12.01) How far is the silage storage located from a water well?	More than 300 feet.	50 to 300 feet.	Less than 50 feet.		
12.02) How far is silage storage from surface water?	More than 300 feet.	50 to 300 feet.	Less than 50 feet.		
12.03) What type of soil is on the property?	Fine-textured soils (clays).	Medium-textured soils (silt loam, loam).	Coarse-textured soils (sands).		

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Bold black print indicates a violation of state or federal regulation.
Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

SILAGE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
12.04) Does untreated silage leachate or polluted runoff run to a low area and pond?	***Provisions are made to control and/or treat leachate to protect groundwater and surface water.***		Silage leachate ponding and/or runoff are evident.	No evidence of leachate runoff and/or ponding.	
12.05) Is clean water (rain water, snow melt, etc.) diverted away from stored feed?	Clean water is diverted away from silage.		Clean water is not diverted away from silage, resulting in contaminated runoff.		
12.06) Are silage leachate and polluted runoff collected and/or treated?	***Provisions are made to control*** contaminated runoff ***and/or treat leachate to protect groundwater and surface water*** from a direct discharge. (Includes capturing of leachate from drains.) Designed system or management controls are in place.	Designed system in place but not maintained.	No system in place. OR, Lack of appropriate management. OR, **Directly discharged to surface water** [4] or groundwater.	Appropriate silage leachate management.	
12.07) What moisture content is silage typically harvested and stored?	***Generally below 67 percent.***	Between 67 and 80 percent.	Over 80 percent.		
BUNKER SILOS					
12.08) What type of floor does the silage storage have?	Concrete or compacted asphalt No cracking (cracks that a finger can fit into or spider webs) or cracks are repaired.	Earthen floor with fine-textured soils (clay, clay loam, silty clay loam, sandy clay, sandy clay loam and silty clay).	Earthen floor has permeable soils or concrete, asphalt or lined surface with many cracks.	A maintained impervious surface or fine-textured earthen floor.	
12.09) Is silage covered?	Silage is covered to prevent silage leachate.	Cover leaks.	No cover.		

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SILAGE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
BUNKER SILOS (CONTINUED)					
12.10) Are the silage pad and surrounding area kept clean and free of loose silage?	Pad is kept clean.	Evidence of spilled or loose silage.	Pad is not kept clean.		
12.11) Is silage kept with a vertical face to reduce contact with clean water?	Yes.	Mostly vertical.	No.		
12.12) Does an emergency plan exist for times when leachate production exceeds current management controls?	An up-to-date written plan is available and understood by all farm employees.	Emergency action plan is incomplete or out-of-date.	No emergency action plan that covers excess leachate.	An up-to-date emergency action plan.	
12.13) Are whole tires or tire sidewalls used for securing the cover on bunker silos?	-Use 3,000 or less whole tires (unless MDEQ approved). No limit on tire side walls. -Whole tires are properly drilled for water drainage.		**- Use more than 3,000 whole tires without MDEQ approval.**[12] - Whole tires are not drilled for water drainage.		
12.14) How are tires and tire sidewalls stored?	Tire and tire sidewall piles are: - not more than 40’ x 200’ horizontal area - not higher than 15’ - no closer than 30’ between piles. - no closer than 20’ from property lines. - no closer than 60’ from buildings and structures. - not stored with hazardous products.		Tire and/or tire side wall storage is not in conformance with low risk guidelines.		

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SILAGE STORAGE (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
BUNKER SILOS (CONTINUED)					
12.15) In the case of a tire fire, does the farm have an up-to-date emergency farm plan?	The farm has an up-to-date emergency farm plan that is understood by employees.	More than one-year-old plan or an incomplete plan is available.	**No emergency farm plan when more than 3,000 whole scrap tires are stored on the farm.**[17]	An up-to-date emergency action plan.	
UPRIGHT SILOS					
12.16) If there is a floor drain, is leachate collected, treated and/or stored and applied at agronomic rates?	All leachate is collected, treated, and/or stored and applied at agronomic rates.		Leachate is not collected and **directly discharges to surface water.**[4]	Appropriate silage leachate management demonstrated.	
12.17) How often is the silo inspected?	Twice a year.	Once a year.	Less than once a year.		
12.18) Is leachate evident around the outside of the silo?	No.	Yes. Leachate is treated or stored.	Yes. Leachate is not treated or stored.		
12.19) For glass-lined storage facilities, how old is the lining?	Less than 6 years.	Between 6 and 40 years.	Older than 40 years.		
SILAGE BAGS					
12.20) Are holes repaired and the bag watertight?	Yes, holes are repaired and the bag is watertight.	Some holes are repaired.	Holes are not repaired, and moisture is entering the bag.		
12.21) Is plastic disposed of in a licensed landfill?	Yes.		No.		
12.22) Is there a mechanism for collecting or treating accumulated leachate?	Yes, leachate is collected and does not pond or reach surface water.		No, **Leachate runs from bags to surface water.**[4]	Any leachate managed properly.	

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MILKING CENTER WASTEWATER TREATMENT

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
13.01) How many gallons of water per cow per day are utilized in parlor cleanup?	Fewer than 10 gallons.	Between 10 to 20 gallons.	More than 20 gallons.		
13.02) Where are milking center chemicals, disinfectants and antibiotics stored?	Stored in partitioned off, protected area away from drains.	Stored in a location where a spill could reach the drain.	Stored in high-traffic area near drains.		
13.03) How is plate cooler water handled?	100% of plate cooler water is reused for livestock watering or other livestock-related use or, permitted for discharge.	Less than 10,000 gallons per day are discharged onto ground surface. Discharged water does not intercept surface water.	**More than 10,000 gallons per day are discharged onto ground surface or intercept surface water without a permit.**[4]	Appropriate cooling water management demonstrated.	
TOTAL COLLECTION METHOD. IF THIS METHOD IS NOT USED, SKIP TO THE NEXT SECTION.					
13.04) Is all wastewater collected and stored?	Wastewater is stored, used or hauled daily.	Wastewater passes through a properly functioning filtration system.	**Wastewater is directly discharged to a lake, drainage ditch, stream or field.** [4]	Appropriate collection of wastewater demonstrated. Records of application.	
13.05) Is rejected milk collected and stored?	Rejected milk is stored, hauled out or fed.		**Milk is discharged**,[4] put into septic system or put into treatment strip.	Appropriate rejected milk management demonstrated.	
MILKING CENTER SEPTIC SYSTEMS. IF THIS METHOD IS NOT USED, SKIP TO THE NEXT SECTION.					
13.06) Is the septic system managed adequately to handle the volume of wastewater?	The septic system ***is managed in a manner to prevent pollution to waters of the state.***		The septic system is not managed adequately and **discharges directly to surface water.**[4]	Reject milk properly managed. System operating effectively, without evidence of a discharge.	
13.07) Is the septic system periodically pumped?	Tank pumped as needed or every three to four months.	Annual pumping.	Tank is rarely or never pumped.		

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MILKING CENTER WASTEWATER TREATMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MILKING CENTER SEPTIC SYSTEMS. IF THIS METHOD IS NOT USED, SKIP TO THE NEXT SECTION.					
13.08) Is all milkhouse wastewater treated by the septic system?	All milkhouse wastewater is treated by the septic system.		Some wastewater is not treated or is **discharged to tile, inlet or drainage ditch.**[4]	Collection and treatment of all wastewater demonstrated.	
13.09) What are the parlor cleanup practices?	Milk, milky rinse water, manure, and feed waste are land applied or otherwise appropriately utilized, and are never discharged to septic or other infiltration type treatment systems.	Some milk, milky rinse water, manure, or feed waste is discharged to septic or other infiltration-type treatment systems. Systems are monitored and managed for proper operation.	Significant milk, milky rinse water, manure, or feed waste is discharged to septic or other infiltration-type treatment systems. Wastewater is **discharged directly to surface water.**[4]	Appropriate milking center cleanup practices demonstrated.	
APPLICATION OF WASTEWATER VEGETATED INFILTRATION SYSTEM. IF THIS METHOD IS NOT USED, SKIP TO THE NEXT SECTION.					
13.10) Is storage used prior to treatment, such as a settling tank or detention basin?	Properly sized settling tank, detention basin or other pretreatment system is used.	Undersized setting tank, lagoon or other pretreatment system.	No pretreatment.		
13.11) Does the system handle the capacity of milking center wastewater generated?	Infiltration area effectively treats the quantity of wastewater generated. ***Treatment area is managed to prevent pollution to waters of the state.***	Infiltration area shows minor erosion, wastewater ponding or burned vegetation.	Infiltration area has excessive erosion, wastewater ponding or burned vegetation.	Properly operating system confirmed by visual inspection of vegetated infiltration system. Refer to *Guideline for Milking Center Wastewater* (Wright and Graves, 1998) and *Milking Center Wastewater Guidelines* (Holmes and Struss, 2009) for more information.	
13.12) How is the designed infiltration system maintained?	***Vegetation maintained and harvested at least once per year.*** Accumulated solids removed, if needed.	Occasional maintenance.	No maintenance.	Vegetation maintained and harvested. Records of maintenance.	

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MILKING CENTER WASTEWATER TREATMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
DIRECT DISCHARGE TO SURFACE OR GROUNDWATER					
13.13) Is wastewater directly discharged to a lake, drainage ditch, stream or field?	***Milk parlor and milkhouse wastewater are managed in a manner to prevent discharge into waters of the state.***		Milking center wastewater is **discharged directly to surface water.**[4]	No discharge present. It is acceptable to discharge milk parlor and milkhouse wastewater into constructed wetlands designed and intended to process those wastes. (NRCS practice standard 656 "Constructed Wetland.")	

OTHER ENVIRONMENTAL RISKS IN THE FARMSTEAD SYSTEM

14.01) Are there other activities, products, processes/equipment, services, by-products, and/or waste at this farmstead that pose contamination risks to groundwater or surface water?	No additional risk(s) identified.	Plan to mitigate the identified contamination risk(s).	No plan to mitigate identified contamination risk(s).	No other environmental risks found at farmstead.	

FARMSTEAD SYSTEM IMPROVEMENT ACTION PLAN

Develop a Farmstead Improvement Action Plan for risks on the farmstead beginning on the inside cover of this bulletin. Once the plan is implemented, MAEAP Farmstead System verification can be requested by calling the Michigan Department of Agriculture and Rural Development at (517) 284-5609.

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Bold black print indicates a violation of state or federal regulation.
Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Table 2. Federal, state and local environmental requirements for operation of this farm business.

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline — 1-800-662-9278, MDARD information — 1-800-292-3939.

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Private pesticide applicator certification	Any persons using or supervising the use of restricted-use pesticides (RUP) in the production of an agricultural commodity on their own or their employer's land must be a certified pesticide applicator.	3 years	MDARD/Pesticide and Plant Pest Management Division (PPPM)	
Pesticide safety training for pesticide workers	The federal Worker Protection Standard for agricultural pesticides requires employers of pesticide handlers and workers to train employees on pesticide safety. Agricultural employers must be able to verify compliance.	Each employee must be trained every 5 years	MDARD/PPPM	
NPDES permit CAFO	National Pollutant Discharge Elimination System permit for large concentrated animal feeding operations (CAFOs).	5 years or as noted on permit	MDEQ/Water Resources Division	
Farm motor vehicle fuel storage tanks greater than 1,100 gallon capacity (above- and below-ground tanks)	Fuel storage tanks have to be certified (aboveground) or registered (underground); a site plan has to have been submitted to the LARA before the installation is placed into service. Smaller tanks have other requirements to be met.	Annual	Department of Licensing and Regulatory Affairs (LARA)	
Air use permit	Permit to install and operate equipment or processes, which may emit air contaminants (incinerators for burning animal carcasses or manure, and biodigesters and associated equipment are examples).	Before construction	MDEQ/Air Quality Division	N.A.
Groundwater discharge permit	Any discharge of waste or waste effluent into or onto the ground (e.g., egg wash water and milk cooling water [over 10,000 gallons/day] that is discharged), and any livestock facility over 5,000 animal units.	5 years	MDEQ/Water Resources Division	
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulation, ordinances and codes.	Before construction	Local health department	N.A.
Septic permit (house and farm operation)	The first step in the process of determining if a piece of land that does not have municipal wastewater services available can be considered for an on-site septic system.	Before construction	Local health department	N.A.

Table 2. Federal, state and local environmental requirements for operation of this farm business.

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline — 1-800-662-9278, MDARD information — 1-800-292-3939.

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Land and water interface construction permits	Construction activities (dredging, filling, draining, construction, structure placement) in, across, under water.	Before construction	MDEQ/ Water Resources Division	N.A.
Soil erosion and sedimentation control permit	Earth change activities within 500 feet of a lake or a stream, or that will disturb an area greater than 1 acre in size.	Before construction	County soil erosion permitting agency	
Water use reporting	Agricultural water users with the capacity to withdraw surface or groundwater that exceeds 100,000 gallons per day (70 gallons per minute) are required to report actual water withdrawals annually.	Annual	MDARD	

Other Environmental Guidelines	Description	Administering Agency
Manure management and utilization	The Michigan Right to Farm Act (Act 93 of 1981) requires the establishment of generally accepted agricultural and management practices (GAAMPs). Agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance litigation. The GAAMPs are reviewed annually. The latest GAAMPs can be accessed at: **www.michigan.gov/mdard**.	MDARD
Pesticide utilization and pest control		
Nutrient utilization		
Site selection and odor control for new and expanding livestock production facilities		
Irrigation water use		
MAEAP verification: Livestock, Farmstead, Cropping and the Forest, Wetlands and Habitat Systems.	MAEAP systems verification (PA 1 & 2, 2011) is valid for five years. MAEAP verification in good standing is dependent on following the practices specific to each system, being in conformance with the applicable GAAMPs, an annual plan review and update (livestock system) and updates as necessary as conditions change on the farm.	MDARD

Table 3. Legal citations for environmental risks in Farm◆A◆Syst.

Footnote	Michigan Law	Description
1	Public Health Code, Public Act 368 of 1978	Part 127: Water Supply and Sewer Systems
2		Part 138: Medical Waste Regulatory Act
3	Safe Drinking Water Act, Public Act 399 of 1976	
4	Natural Resources and Environmental Protection Act 451 of 1994	Part 31: Water Resources Protection
5		Part 55: Air Pollution Control
6		Part 83: Pesticide Control
7		Part 85: Fertilizers
8		Part 111: Hazardous Waste Management
9		Part 115: Solid Waste Management
10		Part 117: Septic Waste Servicers
11		Part 121: Liquid Industrial Waste
12		Part 169: Scrap Tires
13		Part 201: Environmental Response
14		Part 327: Great Lakes Preservation
15	Bodies of Dead Animals Act, Public Act 239 of 1982 as amended	
16	Fire Prevention Code Public Act 207 of 1941	Storage and Handling of Flammable and Combustible Liquids
17	Grade A Milk Law, Public Act 266 of 2001	
18	Michigan Department of Agriculture and Rural Development Pesticide Regulation 637	Pesticide Use
19	Michigan Department of Agriculture and Rural Development Regulation 642	On Farm Fertilizer Bulk Storage
	Federal Law	
20	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	
21	Title III of the Superfund Amendments and Reauthorization Act of 1986, also known as the Emergency Planning and Community Right-to-Know Act	
22	Worker Protection Standard for Agricultural Pesticides	
23	Clean Water Act, Oil Pollution Regulation	

MICHIGAN STATE UNIVERSITY | Extension

Major revision (destroy old). 10:18 – 1,800 – HJ/BP

GREENHOUSE•A•SYST

FOR MICHIGAN PRODUCERS

FAS 108 · October 2018

Greenhouse production in Michigan generates more than $376 million in products (2011 wholesale value) annually. Floriculture requires advanced technology and precise use of pesticides, fertilizers, light, temperature and water to produce bedding and potted plants within a limited area. Like other agricultural enterprises, floriculture involves a number of processes that can potentially affect Michigan's surface and groundwater. Although many improvements have been made to reduce pollution risks, more can be done.

Greenhouse◆A◆Syst was developed to assist greenhouse growers to identify pollution risks and make any needed improvements to protect water resources. Greenhouse◆A◆Syst will also help growers become aware of applicable federal, state and local environmental regulations.

Contact the MAEAP Office at the Michigan Department of Agriculture & Rural Development

(517) 284-5609

MAEAP

MICHIGAN STATE UNIVERSITY | Extension

Greenhouse◆A◆Syst

Greenhouse (Cropping and Farmstead Systems) Improvement Action Plan

Risk question	List high-risk practice(s) from Greenhouse◆A◆Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification?	Management practice to reduce risk. (Include potential sources of technical and financial assistance.)	Action plan	
				Planned completion date	Indicate date when completed
3.09	(example) Pesticide spill clean-up kit not available in pesticide storage	Yes	Acquire pesticide spill clean-up kit for pesticide storage area.	Feb. 2018	**(√)** Completed Feb. 20, 2018

For MAEAP verification, contact MAEAP office at the Michigan Department of Agriculture and Rural Development: 517-284-5609.

(continued on next page)

Greenhouse◆A◆Syst

Greenhouse (Cropping and Farmstead Systems) Improvement Action Plan

Risk question	List high-risk practice(s) from Greenhouse◆A◆Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification?	Management practice to reduce risk. (Include potential sources of technical and financial assistance.)	Action plan	
				Planned completion date	Indicate date when completed

I understand that this farmstead and cropping system assessment (Greenhouse◆A◆Syst) and corresponding Greenhouse (Cropping and Farmstead Systems) Improvement Action Plan were developed on the basis that I have disclosed, to the best of my knowledge, all information pertaining to my cropping operations.

Farmstead address:

Street_____

City_____

State_____ Zip_____

Watershed name_____

Producer's signature _____

Date _____

Greenhouse◆A◆Syst conducted by:

Name_____

Title _____

Organization_____ Date_____

MAEAP Verification Action Plan	Date
Target date for MAEAP verification of **Cropping System**	
Target date for MAEAP verification of **Farmstead System**	
Target date for MAEAP verification of **Livestock System**	
Target date for MAEAP verification of **Forest, Wetlands & Habitat System**	

For MAEAP verification, contact MAEAP office at the Michigan Department of Agriculture and Rural Development: 517-284-5609.

Introduction

Greenhouse◆A◆Syst will help growers develop and implement management plans and site improvements that prevent contamination of groundwater and surface water resources and maintain economic crop production. Plans will be consistent with the identified current Michigan Right to Farm Generally Accepted Agricultural and Management Practices (GAAMPs) and with applicable state, federal and local environmental regulations.

Nutrients used in greenhouse production come from chemical fertilizers and naturally occurring sources. All nutrients, whether synthetic or naturally occurring, can become mixed with surface water or groundwater by natural processes such as runoff and leaching. Nitrate contamination of groundwater and phosphorus contamination of surface water can be problems in Michigan.

Greenhouse◆A◆Syst will assess current nutrient management practices and identify alternative management practices that, when implemented, will reduce nutrient losses to the environment.

Virtually all crops produced in Michigan greenhouses may be threatened by serious pest problems – disease-producing organisms, insects and weeds. Producers are encouraged to adopt pest management practices that achieve the desired crop quality and yield while minimizing any adverse effects on non-target organisms, humans, and soil and water resources. Greenhouse◆A◆Syst will assess current pest management practices and identify alternative management practices that, when implemented, will reduce negative impacts on the environment.

The Michigan Agriculture Environmental Assurance Program (MAEAP) is a comprehensive, proactive and voluntary agricultural pollution prevention program. It takes a systems approach to assist producers in evaluating their farms for environmental risks. The on-farm risk evaluation uses specific tools for each system. Greenhouse◆A◆Syst covers the environmental risks for both the Farmstead and the Cropping Systems.

The Michigan Right to Farm Act authorizes the Michigan Commission of Agriculture and Rural Development to develop and adopt GAAMPs for farms and farm operations in Michigan. These voluntary practices are based on available technology and scientific research to promote sound environmental stewardship. The current Right to Farm GAAMPs are posted on the Michigan Department of Agriculture and Rural Development Web site: www.michigan.gov/mdard.

Producers who complete the Greenhouse◆A◆Syst assessment will be able to determine what structural, management practices or recordkeeping changes (if any) will be needed for the businesses to be environmentally assured through MAEAP. Once a producer develops and implements a Greenhouse (Cropping and Farmstead System) Improvement Action Plan to address the risks indicated by the assessment, he or she can contact the Michigan Department of Agriculture and Rural Development (MDARD) at (517) 284-5609 to request a MAEAP Greenhouse verification (Cropping and Farmstead Systems) inspection. An MDARD inspector will schedule a site inspection to complete the verification process.

P.A. 451, Part 82, of the Natural Resources and Environmental Protection Act ensures the confidentiality of the producer information provided to the MDARD for verification. Any information connected with the development, implementation or verification of a conservation plan or conservation practices is confidential.

Owners of a MAEAP-verified Greenhouse (Cropping and Farmstead System) are eligible for various incentives and can enjoy legislated incentives if an agricultural pollution emergency ever occurs at their facilities and MAEAP standards are practiced.

For a list of currently available incentives and information on how to get started, contact a local conservation district, Michigan State University (MSU) Extension or USDA Natural Resources Conservation Service (NRCS) representative.

Greenhouse operations with nursery stock production will also need to complete Nursery◆A◆Syst. Section 13 of this document (Outdoor Container Management Practices) is for greenhouse producers who have outdoor production of floricultural crops.

What is the Greenhouse Assessment (Cropping and Farmstead Systems)

Greenhouse◆A◆Syst is a series of risk questions that will help assess how effectively a producer's greenhouse management practices protect groundwater and surface water resources. The risk questions are grouped in the following sections:

	Greenhouse (Cropping and Farmstead Systems) Improvement Action Plan
1	Greenhouse Site/Soil Evaluation
2	Water Well Condition
3	Pesticide Storage and Handling
4	Pesticide Handler and Worker Safety
5	Fertilizer Storage and Handling
6	Petroleum Product Storage and Management
7	Waste Management
8	Septic System Management
9	Nutrient Management Practices
10	Water Management Practices
11	Soil and Water Conservation Practices
12	Pest Management Practices
13	Outdoor Production Container Management
14	Other Environmental Risks at the Greenhouse Operation

Each risk question assesses the impact of management practices on groundwater and surface water resources. The risk question answers indicate whether management practices have a low, medium or high risk of water contamination. Producers are generally recommended to adopt the low-risk management practice.

Responses to risk questions that address management practices that are regulated by state or federal law indicate **illegal practices with black bold print**. The numbered footnotes indicate what regulation(s) is violated. Refer to Table 3, page 52.

Responses to risk questions that address management practices covered by the GAAMPs indicate a management practice consistent with a specific GAAMP ***with blue bold italic print***.

Finally,

a blue box indicates the management level(s) required for MAEAP verification.

MAEAP management requirements are aligned with state and federal environmental regulations. The GAAMPs and environmentally based horticultural management practices are supported by research. The records and/or evidence that indicate the approved management practices have been implemented on the farm are listed in the far right column. This evidence will provide the basis for awarding environmental assurance through MAEAP.

Horticultural advisors (both public and private) can assist growers to make the appropriate management changes to become environmentally assured through MAEAP.

How does Greenhouse◆A◆Syst Work?

1) Select all relevant sections for the greenhouse operation.
2) Answer each risk question by selecting the answer that best describes management practices used in the operation. Indicate the risk level in the column to the right. Skip any questions that do not apply to the Greenhouse (Cropping and Farmstead Systems) verification.

   Note: For MAEAP verification, complete the risk questions with a Greenhouse◆A◆Syst trained individual. Locate a MAEAP technician through the county conservation district or MSU Extension office.
3) After completing each section of risk questions, list the practices that present a high risk of contaminating ground water and surface water resources in the Greenhouse System Improvement Action Plan (printed inside the front cover of the bulletin). Also include any medium-risk practices that do not meet MAEAP verification requirements.
4) In the Greenhouse (Cropping and Farmstead System) Improvement Action Plan, list:
   - Management practices or site improvements that are planned for implementation that will reduce the identified risk.
   - Sources of technical and financial assistance.
   - Target dates for accomplishing the changes.
   - Target date for MAEAP Greenhouse (Cropping and Farmstead Systems) verification.

A Few Final Words

The key to Greenhouse◆A◆Syst is that once environmental risks to groundwater and surface water resources have been identified, the plan is implemented to reduce the risks. Some of the stewardship practices that will reduce risks may cost very little and take very little time to implement. Other practices may involve additional cost and may not be implemented for a few years. It is important, however, to have a plan to follow. Once a plan is developed and changes are implemented to address the risks, the greenhouse is ready for MAEAP Greenhouse (Cropping and Farmstead System) verification.

GREENHOUSE SITE/SOIL EVALUATION

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.00) Has there ever been a formal Right to Farm complaint against the farm?	There has never been a Right to Farm complaint or the concern was not verified or the concern was resolved.		There was a formal Right to Farm complaint and the concern was not resolved.	Producer's verbal indication of complaint history.	
1.01) What is the texture of the dominant soil (0 to 5 feet deep) at the greenhouse site?	Very fine-textured soils: clay, clay loam, silty clay loam, sandy clay, sandy clay loam and silty clay.	Medium-textured soils: loam, silt loam, sandy loam and silt.	Course-textured soils: sand, fine sand, very fine sand, loamy very fine sand.		
1.02) What is the depth of the topsoil and subsoil (A & B horizons)?	Greater than 40 inches.	30 to 40 inches.	Less than 30 inches.		
1.03) What is the depth to the seasonal high water table?	Greater than 6 feet.	3 to 6 feet.	Less than 3 feet.		
1.04) What is the soil organic matter content?	Greater than 4%.	1% to 4%.	Less than 1%.		
1.05) What is the makeup of the geological materials more than 5 feet underground?	Low-permeability materials: silt, clay, shale, claystone.		Highly permeable materials: sand, gravel, fractured rock, karst limestone.	No significant erosion present at the greenhouse.	
1.06) Is the greenhouse site subject to visible soil erosion?	Site does not erode.	Slight or occasional erosion with limited risk to surface water.	**Significant erosion occurs annually.** [4]	No significant erosion present at the greenhouse site.	

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WATER WELL CONDITION

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
2.01) How old is the well that serves the greenhouse?	Less than 10 years old.	10 to 25 years old.	More than 25 years old, or age is unknown.		
2.02) What kind of well(s) are present?	Drilled and grouted.	**Drilled and not grouted** [1] or driven point or water jetted.	Large diameter (12 to 48 inches) dug well, or construction is unknown.		
2.03) Is the greenhouse well classified as a private or public water supply?	Private: potable water for drinking or domestic or greenhouse purposes for family members only.	Public: water for drinking or household/greenhouse purposes to persons other than the owner and family (greenhouse with employees or that is open to the public).			
2.04) What is the slope from the well to potential contamination sources?	Well is upgrade from all contamination sources.	Well is at grade from most contamination sources.	Well is downgrade or in a depression relative to contamination sources.		
2.05) What is the condition of the well casing and cap?	No holes or cracks. Cap tightly secured.		**Holes or cracks visible. Cap loose or missing. Water can be heard running into well. Exposed well casing bent.**[1]	Satisfactory well casing and cap present.	
2.06) From the well installation record, is there a protective soil layer (confining material) in the soil formation?	Continuous clay or shale layer more than 10 feet thick. Or, Continuous clay mixture more than 20 feet thick.	Clay or shale layer less than 10 feet thick. Or, Clay mixture less than 20 feet thick.	No protective layer (unconfined aquifer).		
2.07) What is the depth of the well casing?	More than 100 feet. Or, Minimum of 60 feet with 10 feet of clay or 20 feet of clay mixture (confining material).	At least 25 feet, but no confining material.	**Less than 25 feet, or no casing.**[1]		

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WATER WELL CONDITION (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
2.08) What is the casing height above grade?	12 inches or more.	**From grade level to less than 12 inches.**[1]	**Below grade or in a pit or in a basement.**[1]		
2.09) What is the well capacity?	25 gallons per minute or less.	Greater than 25 gallons per minute.			
2.10) When was the last time the well was inspected by a professional well driller or pump installer?	Within the past 10 years.	Between 10 and 20 years ago.	More than 20 years ago, or don't know when the well was last inspected.		
2.11) How is backflow or back siphoning of fertilizer or pesticide mixtures into the water supply prevented?	***Anti-backflow device installed,*** including a Reduced Pressure Zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and 6-inch ***air gap maintained above level of liquid in sprayer tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	Either an ***anti-backflow device installed,*** including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or 6-inch ***air gap maintained above level of liquid in sprayer tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**Neither an anti-backflow device nor air gap maintained.**[1,3]	Anti-backflow device installed, including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or air gap present or demonstrated.	
2.12) Is there an unused well located on the greenhouse site?	No unused well or abandoned well is properly sealed.	-Unused well temporarily abandoned properly: Meets minimum isolation distances. -Is disconnected from any water distribution piping. -Has the top of the casing securely capped.	**Unused, unsealed well at greenhouse site.**[1]	Unused well(s) properly sealed.	
2.13) How often is the drinking water tested for nitrates and bacteria?	Drinking water tested yearly.	Drinking water tested within the past 3 years.	No water testing done, or more than 3 years since last test.	Water tests for nitrates and coliform bacteria within the past 3 years.	

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WATER WELL CONDITION (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
2.14) What are the water test results?	No coliform bacteria or nitrate detected.	Water contamination detected. Public water well(s) test below health advisory limits.	Water contamination detected. **Public water well(s) test above health advisory limits.** [3]	Water tests within health advisory limits for public well.	
2.15) Are the greenhouse site, or portions of the greenhouse site, included in a community wellhead protection area?	No.	Yes, or don't know, and soil characteristics and greenhouse operations pose minimal risks to groundwater.	Yes, and soil characteristics and/or greenhouse operations pose significant risks to groundwater.		
2.16) If a frost-free yard hydrant is connected to a water system, is the hydrant Michigan Department of Environmental Quality (MDEQ)-approved?	MDEQ-approved yard hydrant protects water supply from contaminated water back-siphoned into the hydrant's drain valve. Or, **Yard hydrant is not MDEQ-approved**,[1] but an anti-backflow valve is installed between the hydrant and the water source.		**Yard hydrant is not MDEQ-approved** [1] and there is no anti-backflow valve.		
2.17) If the drinking water well serves 25 or more people for 60 consecutive days (Type IIb public water supply), has it been tested for arsenic?	Drinking water tested on a quarterly basis. Average arsenic level is less than 10 parts per billion (ppb).		**Drinking water is not tested.**[3]		

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WATER WELL CONDITION (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
2.18) If the groundwater and surface water pumps have a combined capacity to pump more than 70 gallons per minute (100,000 gallons per day) for agricultural purposes, has water use been registered and reported to the State of Michigan?	Pump capacity is less than 70 gallons per minute (100,000 gallons per day); Or, Register and report annual water use to Michigan Department of Agriculture and Rural Development by April 1.		**Pump capacity is greater than 70 gallons per minute (100,000 gallons per day) and water use is not reported to the State of Michigan.**[14]	Records indicate compliance with water use reporting.	
2.19) Have new or increased large quantity water withdrawals been registered (pumping capacity greater than 70 gallons per minute [gpm] or 100,000 gallons per day for systems established after July 9, 2009)?	The Water Withdrawal Assessment Tool (WWAT) was used to determine if a proposed withdrawal or expansion is likely to cause an Adverse Resource Impact, and to register the water withdrawal with MDEQ, prior to beginning the withdrawal. The WWAT and registration site is **www.deq.state.mi.us/wwat.**		**No, a new water withdrawal exceeding 70 gpm has been established without the use of the WWAT.**[14]	Producer's verbal indication of compliance with regulation.	

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WATER WELL CONDITION (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
2.20) Is a horizontal sock well (HSW) present at the greenhouse?	-HSW outlets are clearly identified as not being suitable for human consumption. -HSW is completely separated (no common piping) from any potable water supply system. -HSW meets isolation distance requirements the entire horizontal length of the HSW. -Both ends of the HSW are identified.	– HSW outlets are clearly identified as not being suitable for human consumption. – HSW is completely separated (no common piping) from any potable water supply system. – HSW meets isolation distance requirements the entire horizontal length of the HSW except for chemigation/fertigation systems during active use season that have Reduced Pressure Zone (RPZ), double check valve assembly or chemigation valve with an internal air gap installed and secondary containment. – Both ends of the HSW are identified.	**HSW is being used for human consumption, shares common piping with a potable water supply, does not have both ends clearly identified, or does not meet State of Michigan isolation distances** or MAEAP Standard **for its entire horizontal length.** [1,3]	Low- or medium-risk criteria are present or demonstrated.	

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PESTICIDE STORAGE AND HANDLING

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.01) How far is the pesticide storage located from any water well (Private wells include irrigation, livestock watering, cooling, etc.)?	For private wells: 150 feet or greater. Or, with secondary containment 50 feet or greater. For public wells (greenhouse with employees or that is open to the public): more than 800 feet from the farm well. Or, approved isolation distance deviation for the well. Or, between 75 and 800 feet with approved storage and well protective site features.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.** [1] For public wells: (greenhouse with employees or that is open to the public): **Less than 800 feet from the farm well.** [3]	Appropriate pesticide storage isolation distance for site characteristics.	
3.02) How far is the pesticide storage located from surface water (drains, streams, ponds, catch basins on site, etc.)?	***200 feet or greater***	Less than 200 feet with appropriate security measures.	Less than 200 feet.	Appropriate pesticide storage isolation distance from surface water.	
3.03) How are pesticides delivered to the greenhouse?	Just-in-time delivery provided by dealer or greenhouse employee to mix/load site.	Responsible, trained farm employee or family member or dealer transports pesticides to storage.	Untrained greenhouse employee or family member transports pesticides.		
3.04) Where are pesticides stored?	Storage building is locked and separate from all other buildings.	Storage is within the head house or greenhouse but isolated and locked.	Storage is in high traffic area and unlocked.		

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PESTICIDE STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.05) What design features does the pesticide storage have to contain spills and leaks?	Impermeable floor surface does not allow spills to soak into soil. Curb installed on floor to contain leaks and spills or individual package containment.	Impermeable floor surface without curb.	Permeable floor surface (wood, gravel or dirt floor) or impermeable floor with cracks. Spills could contaminate soil. **Drain in the floor that directly discharges to surface water.**[4]	Adequate secondary containment for pesticide storage.	
3.06) What type of pesticide storage shelving is used?	Metal or plastic shelving, with shelf lips to prevent containers from falling. And, Dry formulations are stored on upper shelves and liquids on lower shelves.	Metal or plastic shelves without lips. Or, Wood shelves, covered with an epoxy paint or plastic liner.	Bare wood shelving without lips. Or, No shelves, pesticides containers are on the floor where they may be damaged.		
3.07) What level of security is provided for the pesticide storage?	Fenced or locked area, ***secure from unauthorized access***. Storage separate from all other activities.	Storage open to activities that could damage containers or spill chemicals.	**Open access to pesticide storage could result in theft, vandalism, and injury to children, pets or wildlife.**[19]	Adequate pesticide storage security.	
3.08) What signage is posted on the storage facility?	***A highly visible, weatherproof sign indicates that pesticides are stored there. A "No Smoking" sign is also posted***.	Pesticide storage sign is posted, but "No Smoking" is not posted.	The pesticide storage has no signs.	Pesticide storage signage present.	
3.09) What kind of spill kit is available at the pesticide storage?	***A complete spill kit is immediately available. A fire extinguisher approved for chemical fires is easily accessible*** and useable.	***Spill kit is immediately available***, but no fire extinguisher.	**A spill kit is not available.**[6] A fire extinguisher is not available.	Spill kit with fire extinguisher present at pesticide storage.	
3.10) What total quantities of pesticides are stored on the greenhouse site?	No pesticides stored at any time, or only seasonal use.	One gallon to 10 pounds or more of each pesticide in long-term storage.	More than 56 gallons or more than 55 pounds of each pesticide in long-term storage.		

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PESTICIDE STORAGE AND HANDLING (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
3.11) What quantities of liquid pesticides are stored?	No liquids – all dry formulations.	Some liquid formulations stored.	More than 55 gallons of liquid formulations stored.		
3.12) Are pesticides with high leaching potential stored?	No pesticides stored, or only pesticides with low leaching potential.	Pesticides with low and medium leaching potential stored.	Pesticides with high leaching potential stored.		
3.13) Have Extremely Hazardous Substances (EHS) been reported to authorities?	No EHS stored or used.	EHS stored or used on farm have been identified and reported to local and state authorities (if stored at or above threshold planning quantity).	**EHS stored or used at the greenhouse have NOT been identified or reported.**[19]	Records indicate EHS names have been shared with authorities or that EHS are not used at the greenhouse.	
3.14) What is the condition of stored pesticide containers?	***Original containers clearly labeled or containers appropriate for pesticide storage that are properly labeled.*** No holes, tears or weak seams.	Old containers with hard to read labels. Patched containers, metal containers showing signs of rusting.	Containers have holes or tears that allow chemical to leak. **Some containers have no labels.**[19]	Stored pesticides in satisfactory condition with labels attached.	
3.15) How are pesticide inventory control and disposal of unwanted products managed?	Pesticides accurately inventoried. Old product used first. Unusable product disposed of through Clean Sweep program.	Some inventory process maintained. Unsure of status of unusable product in storage.	No pesticide inventory maintained. Unusable product maintained in storage for indefinite time.		
3.16) Is there a written emergency plan to deal with spills and other farm emergencies?	Up-to-date plan developed and shared with authorities (if required), employees and family members.	More than one-year-old plan or an incomplete plan is available.	An emergency plan has not been developed.	Up-to-date emergency plan.	
3.17) Is there a written pesticide drift management plan for applications made at the farmstead?	***A written drift management plan is utilized that minimizes off-target drift.***	Pesticide applications follow labeled instructions for target pests, but no drift management plan is utilized.	**Spraying operations are completed regardless of weather conditions or forecast, and regardless of the potential of off-target drift.**[3]	A written drift management plan.	

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PESTICIDE STORAGE AND HANDLING (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
3.18) How far is the mixing and loading area from any water well (Private wells include irrigation, livestock watering, cooling, etc.)? Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on greenhouse sites with employees). Use Table 1 in FAS107 for well type identification.	For private wells: 150 feet or greater. Or, with secondary containment 50 feet or greater. For public wells (greenhouse with employees or that is open to the public): -More than 800 feet from the greenhouse well. Or, approved isolation distance deviation for the well. Or, Between 75 and 800 feet with approved storage and well and protective site features. For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For public wells (greenhouse with employees or that is open to the public): **Less than 800 feet from the greenhouse well.**[3]	Appropriate mixing and loading area isolation distance for site characteristics.	
3.19) On the farmstead, how far is the mixing and loading area from surface water or catch basins?	***200 feet or greater.***	Less than 200 feet, with appropriate security measures.	Less than 200 feet, without appropriate security measures.	Appropriate mixing and loading area isolation distance from surface water.	
3.20) How is the potential reduced for surface and groundwater contamination at the mix/load area(s)?	Mixing and loading pad with curb keeps spills contained. Sumps allow collection and transfer to storage.	Mixing and loading on concrete pad without curbs.	No mixing and loading pad. Permeable soil. Spills soak into ground. Same location every time.	Satisfactory explanation of mixing and loading procedures.	

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PESTICIDE STORAGE AND HANDLING (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
3.21) How is backflow or back siphoning of pesticide mixtures into the water supply prevented?	***Anti-backflow device installed,*** including a Reduced Pressure Zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and a 6-inch ***air gap maintained above level of liquid in sprayer tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	Either an ***anti-backflow device installed,*** including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or 6-inch ***air gap maintained above level of liquid in sprayer tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**Neither an appropriate anti-backflow device nor air gap maintained.**[1,6]	Anti-backflow device installed, including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or air gap present or demonstrated.	
3.22) How are tank overflows prevented when filling the sprayer?	***Sprayer monitored when being filled.***		Sprayer seldom or never monitored when being filled.	Satisfactory explanation of spray tank filling procedures.	
3.23) How are pesticides, additives and water quantities measured when loading the sprayer system?	***Measuring devices*** labeled and ***kept in pesticide storage area. Devices rinsed and rinse water put into spray tank.*** Tank capacities labeled.		A variety of unlabeled measuring devices used. Devices may be used for other purposes. Tank capacities not identified.	Set of dedicated measuring devices for pesticides. Spray tank capacities labeled.	
3.24) How are pesticide products transferred from their containers to the sprayer tank?	Closed system for all liquid and dry product transfers.	All liquid and dry products hand-poured. Mixing/storage tank opening easy to reach.	All liquid and dry products hand-poured. Mixing/storage tank opening hard to reach.		
3.25) How is excess spray mixture, or rinse water from the interior of the spray system, disposed?	***Spray mixture applied to labeled site at or below labeled rate of application*** or appropriately stored for later use.		**Spray mixture dumped in greenhouse or directly discharged to surface water.**[4]	Satisfactory explanation of procedures for excess spray mixtures.	
3.26) Where is the exterior of the spray equipment and tractor washed if there is accumulated residue?	Washed in containment or washed in the field in different locations >200 feet from surface water, catch basins or tile inlets and >150 feet from a well.		Washed in the same location without collection, or in the field <200 feet from surface water, catch basins or tile inlets or <150 feet from a well.	Satisfactory explanation of procedures for rinsing sprayer system.	

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PESTICIDE STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
3.27) How is accumulated spray building wastewater, or other comingled rinsates that cannot be directly applied to growing crops, disposed?	Applied to a site where there is growing vegetation or where a crop will be planted following labeled setbacks at or below labeled rates. Application areas are rotated and records of contents of material and application site are kept. Or taken to a hazardous waste landfill.		**Dumped in the farmstead, in the field or a direct discharge to surface water.**[4]	Records of application provided.	
3.28) How are empty pesticide containers rinsed and disposed?	***Containers are triple-rinsed or power-rinsed, punctured*** and returned to dealer, or disposed of in a licensed landfill. Bags are returned to dealer or taken to licensed landfill. Properly rinsed containers can be disposed in a dumpster that is taken to a licensed landfill.	**Disposal of empty containers and bags on the farm property.**[6,8]	**Disposal of partially filled containers. Burning of containers on the greenhouse site.**[6,8]	Rinsed jugs stockpiled for recycling or landfilling. No unrinsed jugs at greenhouse.	
3.29) What type of pesticide containers are purchased?	Where available, all pesticide products are purchased in recyclable or returnable containers to reduce the number of empty containers that require disposal.	Some pesticide products are purchased in recyclable or returnable containers.	Most pesticides are purchased in containers that require special handling or treatment before disposal.		

PESTICIDE HANDLER AND WORKER SAFETY

4.01) How are pesticide handlers/workers trained on pesticide use and handling?	***All handlers/workers are certified pesticide applicators or have had Worker Protection Standard (WPS) training.***		**Handlers/workers are not certified pesticide applicators and have not had WPS training.** [23]	Evidence of pesticide applicator certification or WPS training.	
4.02) How are handlers/workers informed of risks associated with pesticide applications?	***Central notification of pesticide applications is provided. Display includes EPA-approved safety poster, emergency medical information and pesticide application information.***	**Central notification provided, although not all posting requirements are met.**[23]	**No central notification provided.** [23]		

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PESTICIDE HANDLER AND WORKER SAFETY (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
4.03) What supplies are provided to handlers/workers for pesticide decontamination?	***Clean water, soap, disposable towels and clean coveralls (handlers) are available for all handlers/workers within one-quarter.***	**A decontamination site is provided, although not all WPS requirements are met.**[23]	**A decontamination site is not available.**[23]		
4.04) How are workers notified of pesticide applications?	***Oral and/or posted warnings about pesticide application provided.***		**No notice about pesticide application provided.**[23]		
4.05) Who provides and maintains personal protective equipment (PPE) and trains handlers in its use?	***All label-required PPE provided and maintained by employer. Training on use of PPE provided.***	**WPS requirements for PPE partially met.**[23]	**PPE not provided.**[23]		
FERTILIZER STORAGE AND HANDLING					
5.01) How far is the fertilizer storage located from any water well? (Private wells include irrigation, livestock watering, cooling, etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees) Use Table 1 in FAS107 for well type identification.*	For private wells: • 150 feet or greater. Or, • With secondary containment 50 feet or greater. For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well. OR, • Approved isolation distance deviation for the well. OR, • Between 75 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For public wells: (greenhouse with employees or that is open to the public): **Less than 800 feet from the greenhouse well.**[3]	Appropriate fertilizer storage isolation distance for site characteristics.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.02) How far is the fertilizer storage located from surface water (drains, streams, ponds, catch basins on farmstead, etc.)?	***200 feet or greater.***	Less than 200 feet with appropriate security measures.	Less than 200 feet.	Appropriate fertilizer storage isolation distance from surface water.	
5.03) How are liquid fertilizer storage, transfer and application equipment cleaned out?	Fertilizer equipment rinsed on a containment pad or in field. Rinse water applied to crop land at or below argonomic rate.	Fertilizer equipment not rinsed.	Sprayer rinsed out at the farmstead. **Rinse water dumped at farmstead or direct discharge to surface water.** [4]		
5.04) Is the fertilizer storage facility (both liquid and dry) identified with a sign?	Storage facility labeled "Fertilizer," or the fertilizer containers labeled with fertilizer analysis.	No sign.		Note: Bulk liquid fertilizer storages installed after August 13, 2008, having a capacity greater than 2,500 gallons, or having combined capacity of all tanks greater than 7,500 gallons, must be located 200 feet or more from surface water.	.
5.05) What level of security is provided for the fertilizer storage?	***Fertilizer storage areas, valves and containers are secured when not in use.***	Appropriate conditions are partially met.	Fertilizer storage facilities are not locked or secured by any means. Open access to theft, vandalism and children exists.	Adequate fertilizer storage security.	
5.06) Is fertilizer stored in the direct presence of fuel products?	No. Fertilizer is not stored in the direct presence of fuel products.		Yes. Fertilizers and fuel products are stored together – posing an increased potential for explosions and significant disposal problems.		
5.07) How often is the fertilizer storage area inspected for safety concerns?	***At least annually.***		No regular inspections of the storage facility.	Evidence fertilizer storage is inspected at least annually.	
5.08) Is there a written emergency plan to deal with fertilizer spills, discharges and other emergencies?	Up-to-date plan developed and shared with authorities (if required), employees and family members.	More than one-year-old plan or an incomplete plan is available.	An emergency plan has not been developed.	Up-to-date emergency plan.	

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.09) Is there secondary containment for liquid fertilizer stored on the farm?	All liquid fertilizer is stored with secondary containment.	Containers with greater than 2,500-gallon capacity or all containers located at a single site with a combined total capacity of greater than 7,500 gallons have secondary containment.	**Containers with greater than 2,500-gallon capacity or all containers located at a single site with a combined total capacity of greater than 7,500 gallons do not have secondary containment.**[20]	Satisfactory liquid fertilizer secondary storage containers, if required.	
5.10) What kind of structure is used for dry fertilizer storage?	***A structure or device capable of preventing contact with*** irrigation***, precipitation and/or surface water.***		Storage allows fertilizer contact with precipitation and/or surface water.	Satisfactory dry fertilizer storage facilities.	
5.11) What is the condition of storage tanks, hoses, valves, injectors and fittings used for liquid fertilizer?	***Tanks, hoses, fittings and valves are*** in good condition, well maintained and ***compatible with the fertilizer being stored.***	Tanks, hoses, fittings and valves have some rust or signs of wear. Tanks previously used for underground petroleum storage and are in good condition and in secondary containment.	Rusty, aged, worn, damaged or leaking storage tanks, hoses, fittings or valves **directly discharging to surface waters,**[4] or use of underground petroleum tanks without secondary containment.	Satisfactory condition of liquid fertilizer storage system.	
5.12) How is backflow or back siphoning of fertilizer mixtures into the water supply prevented?	***Anti-backflow device installed,*** including a Reduced Pressure Zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and a 6-inch ***air gap maintained above the overflow level of the tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	Either an ***anti-backflow device installed,*** including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap installed, or 6-inch ***air gap maintained above the overflow level of the tank.*** Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**Neither an anti-backflow device, including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, nor air gap maintained.**[1,4]	Anti-backflow device, including an RPZ valve, double check valve assembly, or chemigation valve with an internal air gap, or air gap present or demonstrated.	
5.13) What is done with excess fertilizer solutions at the end of the greenhouse season?	Fertilizer solutions applied to crop at or below agronomic rate. Or, Excess fertilizer concentrates returned to dealer.	Excess fertilizer stored until next year.	Excess fertilizer solutions applied to crop without agronomic considerations. **Fertilizer solution dumped on the greenhouse site or in nearby field or pond.**[4,6]		

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FERTILIZER STORAGE AND HANDLING (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
5.14) How far is the mixing and loading area from the water well? (Private wells include irrigation, livestock watering, cooling, etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees). Use Table 1 in FAS107 for well type identification.	For private wells: • 150 feet or greater. OR, • With secondary containment 50 feet or greater. For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well, OR, • Approved isolation distance deviation for the well, OR, • Between 75 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[3]	Appropriate mixing and loading area isolation distance for site characteristics.	
5.15) How far is the mixing and loading area from surface water?	***200 feet or greater.***	Less than 200 feet with appropriate security measures.	Less than 200 feet, without appropriate security measures.	Appropriate mixing and loading area isolation distance from surface water.	
5.16) When not in use, where are planting and spray supply vehicles (trailers and trucks) parked to protect water resources from accidental fertilizer and pesticide spills and mischievous activities?	Supply vehicle returned to a secure location when not in use. Fertilizer and pesticides (including treated seed) properly stored more than 150 feet down gradient from any well.		Fertilizer and pesticide (including treated seed) supply vehicle left in an unsecured location. Or, Fertilizer and pesticides **stored less than 150 feet away from any well.**[1]	Map showing where vehicles should not be parked adjacent. No evidence vehicles left in unsecure location.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT

THIS SECTION IS DESIGNED TO HELP MEET ENVIRONMENTAL CONCERNS RELATED TO PETROLEUM STORAGE; IT IS NOT INTENDED TO REPRESENT ALL OF THE LEGAL REQUIREMENTS FOR STORAGE AND HANDLING OF PETROLEUM PRODUCTS ON THE FARM.

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES					
6.01) Are fuel storage tanks designed for the way they are being used and compatible with the material stored?	Each tank designed for the way it is being used and compatible with the material stored.		**Belowground tank being used for aboveground petroleum storage, aboveground tank being used for underground petroleum storage or tank does not meet specifications for usage.**[17]	Fuel tanks used appropriately.	
6.02) Are fuel storage piping, secondary containment and related equipment designed for the way they are being used and compatible with the material stored?	Fuel storage piping and equipment designed for the way they are being used and compatible with the material stored.		Fuel storage piping or equipment not designed for the way it is being used. **Belowground piping on all underground tanks or aboveground tanks of greater than 1,100-gallon capacity not corrosion protected.** [17]	Fuel storage equipment appropriate for use.	
6.03) Are fuel tanks monitored for leaks and are leaks repaired?	Owner and operator ensure that releases do not occur.		Tank and piping not monitored and repaired on aboveground tanks equal to or less than 1,100-gallon capacity. **Tank and piping not monitored and repaired on all tanks greater than 1,100-gallon capacity.** [17]	No fuel leaks present.	
6.04) What design feature does the fueling station have to prevent spills from entering the groundwater, surface water or subsurface soils?	Impermeable and compatible surface for fuel transfer, such as concrete without cracks.	Compatible surface for fuel transfer such as asphalt for diesel fuel, sealed asphalt for gasoline, steel or other compatible liner material.	Incompatible surface such as unsealed asphalt surface for gasoline.	Impermeable or compatible surface present for fuel transfer.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.05) Is the fill opening separate from the vent opening?	Yes.		**No.**[17]		
6.06) How far is the fuel storage from any water well? (Private wells include irrigation, livestock watering, cooling, etc.) Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees.) Use Table 1 in FAS107 for well type identification.	For private wells: • 50 feet or greater for tanks less than 1,100-gallon capacity with no secondary containment, OR, • 50 feet or greater for tanks greater than 1,100-gallon capacity or more with secondary containment. For Type III or Type IIb public wells: • More than 800 feet from the farm well, OR • Approved isolation distance deviation for the well, OR • No less than 75 feet for a Type IIB or III well if secondary containment, and site and well protective features are present.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 50 feet for most storage tanks.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well without an approved deviation, protection features or secondary containment.**[3]	Appropriate fuel storage isolation distance from water well.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.07) Does the tank have secondary containment?	Double-walled tank with continuous space between the two walls, tank in concrete vault or tank in diked area.	No secondary containment for tanks equal to or less than 1,100-gallon capacity.	No secondary containment when combined aboveground storage capacity is 1,320 gallons (55-gallon containers or larger) **or aboveground tanks is greater than 1,100 gallons.**[17]		
6.08) If a combined aboveground petroleum storage capacity of greater than 1,320 gallons (counting 55-gallon containers and greater) is present and could reasonably discharge into navigable waters of the United States, has a spill prevention control and counter-measure (SPCC) plan been developed?	Plan developed and copy present at greenhouse facility.		**No plan.**[24]		
6.09) What is the maximum fuel storage capacity (in aggregate) at the greenhouse?	48,000 gallons or less in UL 142 single- or double-walled tanks; or 80,000 gallons or less in fire-rated tanks.		**Greater than 48,000 gallons in UL 142 single or double wall tanks; or greater than 80,000 gallons in fire-rated tanks.**[17]		
6.10) Does each tank's fill opening have a lockable closure?	Fill pipe equipped with a lockable closure.		**No lockable closure on fill pipe.**[17]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.11) How far is the tank from a storm drain, surface water or designated wetland?	Tank is more than 50 feet away or has some other engineering control present that would control or divert a spill from reaching a storm drain, surface water or designated wetland.		**Tank 50 feet or less.**[17]	Appropriate fuel storage isolation distance from surface water.	
6.12) For tanks <1,100 gallons, how far is the (non-fire-protected) tank from buildings and property lines?	More than 40 feet from a building or a structure.		**- Located inside a building** **- 40 feet or less from a building, or a structure.**[17]		
6.13) How many tanks (equal to or less than 1,100 gallons) are at each site at one facility?	3 or fewer.	More than 3.			
6.14) How far apart are fueling sites at the facility?	100 feet or greater.	Less than 100 feet.			
6.15) Are the portable fueling tank and transfer system adequate to reduce risk of environmental contamination?	UL-approved tank and adequate fueling system.	Adequate portable fueling system that reduces risks.	Inadequate portable fueling system that poses risk of environmental contamination.	Adequate portable fueling system.	
6.16) Do mobile fuel tanks meet the Federal Hazardous Materials Regulations (FHMR) and U. S. Department of Transportation (USDOT) specifications?	Yes, the mobile fueling systems meets the FHMR including USDOT specifications or USDOT specifications do not apply because the tank is less than 502 gallons, and only goes from farm to field and is properly secured and free from leaks.		No, the tank poses an environmental risk.	Meeting USDOT specifications includes having shipping papers, tank markings and placards. See FAS 112S.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.17) Is the tank labeled according to its contents with letters 3 inches or more in height?	Yes, labeled according to contents (Gasoline or Diesel) and with the following: "FLAMMABLE" (OR "COMBUSTIBLE") and "KEEP FIRE AND FLAME AWAY". If tank is not a fire-protected type, it is also labeled: "KEEP 40 FEET FROM BUILDINGS."		**Tank labeled with contents. Tanks storing gasoline not labeled: FLAMMABLE – KEEP FIRE & FLAME AWAY. Tanks storing diesel not labeled: COMBUSTIBLE – KEEP FIRE & FLAME AWAY.**[17]		
6.18) Is the tank elevated off the ground to protect from corrosion?	Tank stably mounted on solid timbers, solid cement blocks, manufactured cradles or equivalent to protect the tank bottom from corrosion due to contact with ground. The tank is elevated to allow for a visible inspection of all tank surfaces.		**Tank is not stably elevated in order to allow adequate visible inspection of all tank surfaces.**[17]	Appropriate tank elevation.	
6.19) Are siphons, manifolds or internal pressure discharge devices present on tank(s)?	Siphons not present on tank(s). Multiple tanks not connected together (no manifold). No internal pressure discharge device present.	Manifold(s) present on tanks installed prior to 2003. After 2003, tanks that are located within diked containment, equipped with a spill bucket and audible overfill alarm may have top-only manifolds.	**Siphons or internal pressure discharge device(s) present on tanks installed after 2003.**[17]	No siphons or internal pressure discharge devices present. No manifolds present on tanks installed after 2003 unless additional protection factors are present.	
6.20) Is the tank dispenser (top-opening tank) or discharge connection (gravity discharge tank) made inoperable when not in use?	Yes, locked or otherwise made inoperable.		**No.**[17]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ALL PETROLEUM STORAGE FACILITIES (CONTINUED)					
6.21) Does the top-opening tank pump discharge or gravity discharge tank have a self-closing nozzle?	Yes.		**No.**[17]		
6.22) If a single-walled tank is in a dike with rain protection, is the roof or canopy and supports constructed of non-combustible material and designed so vapors don't collect?	Yes.		**No, combustible materials used or design is such that vapors collect under the roof or canopy.**[17]		
6.23) If the tank is covered, are roof and canopy supports located on edge of dike or outside diked area?	Yes.		**No.**[17]		
6.24) If the tank is covered, is the lowest elevation of the roof or canopy 6 feet or higher above the top of the tank?	Yes.		**No.**[17]		
6.25) If the tank is covered, does the normal tank vent extend through the roof or canopy?	Yes.		**No.**[17]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
FARM MOTOR VEHICLE FUEL STORAGE TANKS					
6.26) Is the tank registered and is valid proof of registration displayed?	The aboveground storage tank with capacity greater than 1,100 gallons is registered, and valid proof of registration is available.	The total volume of fuel storage on site is less than 10,000 gallons. **The tank is not registered, or valid proof of registration is not available,**[17] but an inspection finds it meets all applicable boxed MAEAP requirements in the Petroleum Product Storage and Management section.	**The tank is not registered and/or the tank does not bear a UL tag, and/or valid proof of registration is not available.**[17]	Aboveground storage tank is registered or there are minimal environmental risks.	
6.27) Does tank fill pipe have spill protection?	Spill protection (catch basin) installed and maintained on tank fill pipe.		**Tank fill pipe does not have spill protection.**[17]	Catch basin installed on fuel tank.	
6.28) Is there an emergency control disconnect for electrically operated fuel systems?	Emergency control disconnect located 20 to 100 feet away from dispensing area.		**No emergency control disconnect present.**[17]	Appropriate disconnect control present.	
6.29) Are there absorbent materials, a container with lid and a non-metallic shovel to deal with a petroleum spill?	Spill kit present.		**No spill kit.**[17]	Spill kit present.	
ABOVEGROUND STORAGE TANKS					
6.30) Does the tank have secondary containment?	Double-walled tank or tank within diked area.		**No secondary containment.**[17]	Appropriate secondary containment.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ABOVEGROUND STORAGE TANKS (CONTINUED)					
6.31) How far is the tank from buildings, property lines and public ways?	From Bldg. / From lot line / From public way		**Less than distance indicated for type of tank.**[17]		
In-vault tank up to 15,000 gallons:	0 feet / 0 feet / 0 feet				
Protected aboveground tank (UL 2085 tank) 6,000 gallons or less:	5 feet / 15 feet / 5 feet				
UL 2085 tank 6,000 to 12,000 gallons or less:	15 feet / 25 feet / 10 feet				
UL2080 tank 0-12,000 gallons:	25 feet / 50 feet / 25 feet				
Other secondary containment tank up to 12,000 gallons:	50 feet / 100 feet / 50 feet				
6.32) Is there a fence to prevent unauthorized entry?	Tank or property fenced or tank within vault with entry protected from unauthorized entry or vandalism.		**Unprotected from unauthorized entry.**[17]		
6.33) Is there crash protection for the tank and piping?	Guard posts or appropriate barrier installed for crash protection.		**No crash protection.**[17]	Crash protection present for fuel tank.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
ABOVEGROUND STORAGE TANKS					
6.34) Is the tank labeled according to its contents with letters 3 inches or more in height?	Yes, labeled according to contents (Gasoline or Diesel) and with the following "FLAMMABLE (or COMBUSTIBLE) LIQUIDS" and "KEEP FIRE AWAY."		**Tank not labeled.**[17]		
6.35) Are there any unused fuel storage tanks on the farm?	If aboveground tank present, it has been emptied, cleaned of liquid and sludge, rendered vapor free and safeguarded from trespassing.		**Aboveground tank present and not empty, clean and/or vapor free. Tank fill opening not secured to prevent trespassers from putting chemicals in tank.**[17]		
UNDERGROUND STORAGE TANKS					
6.36) Has the underground fuel tank (installed before August 1, 2003 with a capacity of less than 1,100 gallons) been tested for leaks within the past 3 years?	No leaks detected.		No testing.	Appropriate report indicates no leaks present.	
6.37) Does the underground storage tank (installed after August 1, 2003 with a capacity of less than 1,100 gallons) meet Flammable Liquid Combustible Liquid (FLCL) rules?	Leak detection system in place. Tank has corrosion protection, spill bucket installed and overflow prevention in place (alarm or shutoff valve).		**FLCL rules not met.**[17]	Tank meets FLCL rules.	

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
UNDERGROUND STORAGE TANKS (CONTINUED)					
6.38) Do tank(s) or piping that are in contact with the soil have corrosion protection on all parts?	Properly engineered, installed, maintained and inspected (every 3 years) corrosion protection provided for tank, piping or portions in contact with the soil.		**Tank or piping in contact with soil without corrosion protection or unmaintained protection. Not inspected at least once every 3 years.**[17]		
6.39) Are there any unused fuel storage tanks on the farm.	If tank present, it has been emptied, cleaned of liquid and sludge, rendered vapor free and safeguarded from trespassing.		**Tank present and not empty, clean and/or vapor free. Tank fill opening not secured to prevent trespassers from putting chemicals in tank.**[17]		
6.40) Is the underground tank registered, and is valid proof of registration available?	The underground storage tank with capacity greater than 1,100 gallons is registered and proof of registration is present.		**The tank is not registered, and/or proof of registration is not present.**[17]	Underground storage tank is registered.	
6.41) If there is an underground fuel storage tank greater than 1,100 gallons on the farmstead is there a State of Michigan certified operator for the farm?	Yes.		**No.**[17]		
6.42) Did a professional (trained and certified by the tank manufacturer) install the tank?	Professional installation.		**No.**[17]		
6.43) Is there insurance or demonstration of financial responsibility should there be a fuel release?	Yes, meet the $500,000 financial responsibility level for tanks less than 10,000 gallons.		**Unable to demonstrate financial responsibility for third party injury and property damage due to accidental release.**[17]		

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PETROLEUM PRODUCT STORAGE AND MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
UNDERGROUND STORAGE TANKS (CONTINUED)					
6.44) Are there any unused underground fuel storage tanks on the farm?	No, tanks have been removed from the ground and the site. Excavation site checked for evidence of contamination (site assessment). Any contamination present was properly handled.	Underground tanks have been removed or filled with inert solid material. A site assessment has not been completed.	**In-ground tank has been left unused for 12 months. Tanks greater than 1,100 gallons have been removed or filled with inert material but a site assessment has not been completed.**[17]	Proper management of an unused underground fuel storage tank(s).	
OTHER PETROLEUM PRODUCT STORAGE					
6.45) Is the heating oil tank for a farm building being used as designed?	Tank is labeled and used as designed.	Tank is not labeled and used outdoors.	Tank is not being used as designed.	Heating oil storage tank is appropriate.	
6.46) Is a heating oil tank being used to store diesel fuel?	Yes, but tank is labeled as a UL 80 tank and is being used as designed.		Tank is not labeled or is not being used as designed.	Diesel fuel storage tank is appropriate.	
6.47) How far is the home heating fuel or kerosene tank from a building?	Minimum of 5 feet from the building.		Less than 5 feet.		
6.48) How far is the fuel tank for the emergency generator from any well?	For private and public wells: Close proximity to the well if the emergency generator provides power to the well in the event of a power outage, and the fuel is in secondary containment. If the emergency generator is not used to run the well, standard well isolation distance criteria applies.		The emergency generator does not run the well and does not meet standard well isolation distance: For private wells: **Less than 50 feet for most fuel tanks.**[1] For public wells: **Less than 800 feet from the well without an approved deviation, protection features or secondary containment.** [3] **Less than 75 feet with fuel in secondary containment.**[1,3]	Acceptable fuel storage isolation distance from water.	

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WASTE MANAGEMENT

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
7.01) How are household waste and waste generated at the greenhouse managed?	All waste recycled or disosed of in a licensed solid waster facility or incinerator.		Household waste burned on site (if allowed by local government). **Greenhouse waster burned on site.**[9]		
7.02) Is there a trash dump?	No dump or dump property cleaned up and closed.	Dump exists but is not being used.	Dump still in use.		
7.03) If a household trash burn barrel or incinerator exists, how are the ashes disposed?	Ashes collected and disposed at a licensed landfill.	Ashes store or disposed on the greenhouse site more than 300 feet from a well or surface water.	Ashes stored or disposed on the greenhouse site within 300 feet of a well or surface water.		
7.04) How are hazardous product containers (treated seed packages, fertilizer bags, chemical containers, etc.) disposed?	Recycled or reused appropriately. Or, Disposed at a licensed landfill, or hazardous waste collection service used, or returned to the dealer.		**Empty and partially filled containers burned or disposed on the greenhouse site.**[9]		
7.05) How is waste oil disposed?	Recycled.	Burned in approved waste oil heater or furnace.	**Dumped on the greenhouse site**.[8]	Evidence of proper oil recycling or disposal.	
7.06) How is antifreeze disposed?	Recycled.	Disposed of in a municipal sewer (with municipality's approval).	**Dumped on the greenhouse site**.[8]	Evidence of proper antifreeze recycling or disposal.	
7.07) How are scrap tires disposed?	Recycled	Dump exists but is not being used.	**Disposed on the greenhouse site**.[12]		
7.08) How are lead-acid batteries disposed?	Recycled.		**Disposed of** or stored **on the greenhouse site**.[8]	Evidence of proper battery recycling.	

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WASTE MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
7.09) How are paints, solvents and/or cleaners disposed?	Used up, taken to household hazardous waste collection or recycled.	Liquid evaporated in open air, sludge taken to licensed landfill.	**Burned or disposed of** or stored **on the greenhouse site.** [8]	Evidence of proper recycling or disposal.	
7.10) How far from water wells are hazardous products stored? (Private wells include irrigation, livestock watering, cooling, etc.)* (Type IIb and Type III Public wells include that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees).* Use Table 1 in FAS107 for well type identification.*	For private wells: 150 feet or greater. OR, With secondary containment, 50 feet or greater. OR, For public wells (dairy farms or farms with employees): More than 800 feet from the farm well. OR, Approved isolation distance deviation for the well. OR, Between 75 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.*		For private wells: **Less than 150 feet without secondary containment, or less than 50 feet with secondary containment.** [1] For Type IIb or Type III public wells: **Less than 800 feet from the farm well.** [3]		
7.11) Are used motor oil, new oil and hydraulic oil stored in acceptable containers and properly isolated from drinking water wells?	Oil in acceptable containers stored on impermeable floor or in secondary containment, and with reasonable isolation from any well and does not discharge to surface water.	Oil stored in acceptable containers, but with inadequate isolation from any well and does not discharge to surface water.	Oil stored in a leaking container. Evidence of oil soaking into the soil **and/or discharges to surface water.** [4]	Acceptable oil storage demonstrated.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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WASTE MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
7.12) Are there any storage tanks being used to store motor oil, new oil, hydraulic oil, or any other petroleum product underground?	There are no storage tanks in use underground.	Yes. The tanks meet all the applicable underground storage tank standards found in the Petroleum Product Storage and Management section of the Farm*A*Syst (FAS107)	**Yes. But the tank does not meet the standards found in the Petroleum Product Storage and Management section of FAS 107.**[17]		
7.13) Are floor drains present in buildings?	No floor drains, Or, All drains go to an appropriate system designed for the materials drained.	Floor drains are made inoperable except when used for appropriate materials, or materials are stored in secondary containment to prevent leaks from entering drain.	**Floor drains are discharged to surface water,**[4] are vulnerable to spills, or **drain hazardous materials to inappropriate systems.**[4]	Quantities of hazardous materials stored in secondary containment or floor drains plugged to prevent spills or major losses from entering the drain.	
7.14) Is there a mercury manometer on the farm?	No mercury manometer.		Mercury manometer present.	No mercury manomter gauges on the farm.	
7.15) Are there mercury-containing devices on the farm? (Examples include fluorescent lights, thermostats, thermometers, irrigation switches, septic lift station switches and other switches.)	No.	Some mercury-containing devices in use. Proper disposal methods when replaced.	Yes, many mercury-containing devices.	Examples: recycling centers or return to retailer.	
7.16) How are old or unusable plant containers and trays disposed?	Containers are recycled or reused.	Containers are disposed of in a licensed landfill or stored on site.	**Waste containers are burned** [9] or disposed on site.	Evidence of system for recycling or proper disposal of waste containers.	

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WASTE MANAGEMENT (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
7.17) How often is greenhouse poly changed?	Using poly or covering that will last for 3 or more years.	Price is the primary factor; purchase product that lasts only 1 to 2 years.			
7.18) How is greenhouse poly disposed?	Recycled through a recycling company or offered to others for reuse.	Disposed of in a licensed landfill or stored on site.	**Greenhouse poly burned on site.** [9]	Evidence of system for recycling or proper disposal of used greenhouse poly.	
7.19) Are biodegradable containers used?	Incorporating biodegradable containers in program.	Have not considered or studied the use of biodegradable containers.			
7.20) How are unwanted media and other organic wastes disposed?	Media and organic wastes are separated from containers and composted or land applied. Compost pile stored in a location protected from leaching and runoff.		Media and organic wastes stored in an unprotected site. **Nutrients can leach into the groundwater or runoff into surface water.** [9]	Environmentally safe disposal demonstrated. Note: The Food Safety Modernization Act Produce Safety Rule may apply.	
7.21) Are other materials recycled?	All paper, cardboard, plastic containers, aluminum and steel recycled.	Most recyclables are recycled.	Only deposit can/bottles are redeemed.		
SEPTIC SYSTEM MANAGEMENT					
8.01) Is the bathroom on the greenhouse site connected to a septic or municipal system to treat the waste?	Bathroom on the greenhouse site connected to septic tank and drainage field or to a municipal system, or to another system approved by the local Health Department. Or, No bathroom on the greenhouse site.		**No septic system. Direct discharge of wastes to environment.** [4]	If there is a bathroom on the greenhouse site, it must be connected to a functioning septic system.	

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SEPTIC SYSTEM MANAGEMENT (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
NOTE: COMPLETE THE REMAINDER OF THIS SECTION ONLY IF THE GREENHOUSE HAS A SEPTIC SYSTEM					
8.02) Is the septic system adequately sized to treat wastewater generated in the greenhouse?	Septic system designed to handle more wastewater than required.	Capacity just meets wastewater requirement.	Design capacity is much less than potential flow of wastewater. Or, No septic system; **direct discharge of wastes to environment.**[4]		
8.03) What is the age of the septic system?	Less than 5 years old.	6 to 20 years old.	More than 20 years old.		
8.04) What distance separates the septic system components from water wells?	Greater than 50 feet from private wells (75 feet from public wells, including greenhouse with employees or that is open to the public).		**Less than 50 feet from a private well (less than 75 feet from public wells, including greenhouse with employees or that is open to the public.)**[3]		
8.05) When was the last time the septic tank was pumped out?	Within the past 5 years.	Between 5 and 10 years.	More than 10 years ago.		
8.06) Who pumps out the septic tank?	Licensed septage hauler.		**Farmer/self or unlicensed contractor.**[10]	Satisfactory explanation of tank pumping procedures.	
8.07) How is the drain field protected from traffic, deep-rooted plants and structures?	Vehicles and other heavy objects or activities kept away from drain field area. No deep-rooted plants, pavement or structures over the drain field.		Vehicles, livestock, heavy objects or other disturbances permitted in area. Trees planted in or directly next to the drain field.		

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SEPTIC SYSTEM MANAGEMENT (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
NOTE: COMPLETE THE REMAINDER OF THIS SECTION ONLY IF THE GREENHOUSE HAS A SEPTIC SYSTEM					
8.08) Are there any signs of trouble with the septic system?	Greenhouse sanitary drains flow normally. No sewage odors inside or outside. Soil over drain field firm and dry. Well water tests negative for coliform bacteria.	Greenhouse sanitary drains run slowly or soil over drain field is sometimes wet.	Sewage odors noticed in the greenhouse or near the drain field. Drains plugged or backed up. Soil wet or spongy in the drain field area. Well water tests positive for coliform bacteria.	Note: The Food Safety Modernization Act Produce Safety Rule may apply.	
8.09) What records are maintained on the septic system?	Good map and records of system repairs and maintenance are kept.	Some records maintained.	No map and maintenance records kept.		
8.10) What kinds of greenhouse cleaners, solvents and other chemicals are poured down the drain?	Moderate use of cleaning products that end up in wastewater. Hazardous chemicals never poured down the drain or toilet.	Moderate use of cleaning products. Small amounts of hazardous chemicals poured down drain or toilet.	Heavy use of cleaning products. **Septic system used to dispose of hazardous chemicals (solvents, degreasers, acids, oils, paints, disinfectants, pesticides).**[4]		
8.11) How is the water softener recharge handled?	Underground drainage separated at least 50 feet from well and septic systems (75 feet from the farm well for greenhouse with employees or open to the public).	Open ditch, farm field drain.	Septic system.		
8.12) How are discharges from footer drains, basement sumps and roof drainage handled?	Grassed area, open ditch, field drain.		Directed into the septic system.		
NUTRIENT MANAGEMENT PRACTICES					
9.01) How are pH and electrical conductivity (EC) meters used to manage fertilizer use?	Meters – pH and EC – are present at all times for monitoring container substrate before and after planting and during growing. Instruments are calibrated regularly.	Either a pH or an EC meter is available to do trouble-shooting when necessary.	Neither a pH nor an EC meter is available.		

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
9.02) How often is irrigation water monitored for alkalinity?	Water tested before every crop cycle to determine alkalinity.	Water tested once every 1 to 5 years to determine alkalinity.	Water never tested or tested for alkalinity only if there is a crop nutrition problem.		
9.03) How often is premixed medium monitored for pH and electrical conductivity (EC)?	Each shipment of premixed medium is tested for its pH and EC.	Several samples of premixed medium are tested during the season for pH and EC.	Premixed medium is not tested for pH or EC.		
9.04) How often is on-site-mixed medium monitored for pH and EC?	Growing medium is tested at least weekly for pH and EC.	Growing medium is tested periodically for pH and EC.	Growing medium is not tested for pH or EC Or, is tested only when there is a problem.		
9.05) How often is irrigation water monitored for pH and EC?	Irrigation water is tested for pH and EC weekly.	Irrigation water is tested for pH and EC periodically.	Irrigation water is not tested. Or, tested for pH and EC only when there is a growing problem.		
9.06) How are the fertilizer stock tanks near injectors protected from leaking into groundwater?	Stock tank on concrete floor with a curb and a catch basin installed.	Stock tank on a concrete floor, no curb, or in plastic secondary containment.	Stock tank on a permeable surface.		
9.07) How are aboveground ebb and flow storage tanks protected from leaking into groundwater?	Tanks in an isolated area, on a concrete floor with a curb and a catch basin installed.	Tanks in a traffic area on a concrete floor, no curb.	Tanks on a permeable surface, not barricaded.		
9.08) How are underground ebb and flow storage tanks protected from leaking into groundwater?	Concrete structure, treated with impermeable material on the inside and outside, with catch basin below.	Concrete structure, treated with impermeable material on one side, no catch basin.	Concrete structure, no treatment of surface.		
9.09) How often is nutrient testing done by a commercial laboratory or land-grant university?	Medium and tissue testing done several times a growing season through commercial laboratory or land-grant university.	Medium and tissue testing done through commercial laboratories or land-grant universities once a growing season.	Greenhouse company has rarely used the services of a commercial laboratory or land-grant university.		

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
9.10) How is slow-release fertilizer used in the operation?	Slow-release fertilizer is used only in those crops that require high nutrient levels or are in hard-to-get-to places.	Slow-release fertilizer is used on crops requiring a lot of watering (leaching).	Slow-release fertilizer is used on all crops because of convenience.		
9.11) How are fertilizer application rates determined?	***Consistent with Michigan State University (MSU) recommendations.*** When MSU recommendations are not available, other land-grant university or industry recommendations developed for the region may be used.	Occasionally exceed MSU or equivalent recommendations.	Often or always exceed MSU or equivalent recommendations.	Applications consistent with MSU recommendations. When MSU recommendations are not available, other land-grant university or equivalent recommendations developed for the region may be used.	
9.12) How are fertilizer solutions managed to prevent application to vacant crop areas?	Applications of fertilizer solutions are automated or applied manually so that vacant crop areas do not receive fertilizer solutions.	Fertilizer solutions applied to vacant crop areas, but fertilizer solutions are captured and do not discharge to the environment.	Fertilizer solutions applied to vacant crop areas. **Fertilizer solutions discharge to groundwater or surface water**.[4]	Fertilizer solutions properly managed and do not discharge to the environment.	
9.13) How are nitrogen fertilizer applications determined?	Nitrogen fertilizers are applied according to container substrate tests and crop requirements.	Nitrogen fertilizers are applied according to visual observation or past practices.			
9.14) How are phosphorus fertilization rates determined?	***Based on soil tests or plant tissue analysis using Michigan State University recommended rates,*** other land-grant university standards or industry standards if land-grant university standards do not exist.	Crop is grown with phosphorus rates higher than recommended.	High-phosphorus fertilizers are used routinely.	Applications consistent with MSU recommendations. When MSU recommendations are not available, other land-grant university or industry recommendations developed for the region may be used.	
9.15) How is P management changed when phosphoric acid is used to acidify irrigation water?	Phosphoric acid credited, phosphorus fertilizer reduced.		No changes in phosphorus fertilizer applications.		

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NUTRIENT MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
9.16) What fertilizer records are kept?	***Maintain records of fertilizer purchases.***		No fertilizer records maintained.	Fertilizer records on file (fertilizer types and quantities) or plan to maintain records in the future.	

WATER MANAGEMENT PRACTICES

10.01) What is the water source?	Municipal supply.	On-site well.	Stream, river or pond.		
10.02) What irrigation management records are maintained?	***Maintain annual records of irrigation water used or irrigation scheduling.***		No irrigation records maintained.	Irrigation records on file, or plan to maintain records in the future.	
10.03) How is irrigation water managed to prevent a discharge to the environment?	Water is recycled or does not leave the greenhouse or facility.	Runoff water is controlled to minimize leaching and prevent a direct discharge.	**Irrigation water from greenhouse goes directly into a ditch or storm sewer, or significant leaching occurs.**[4]	Evidence of a system that prevents direct discharge or leaching.	

SOIL AND WATER CONSERVATION PRACTICES

11.01) What percent of the parking lot area is covered with impervious surfaces?	Less than 5 percent.	5 to 20 percent.	More than 20 percent, and no provision to manage runoff.		
11.02) How is greenhouse roof runoff water handled?	A retention pond, settling basin or man-made wetland to capture greenhouse runoff water and hold it.	Plans being made to build either a retention pond, settling basin or man-made wetland to capture greenhouse roof runoff water and hold it.	No roof runoff system in place.		
11.03) How is the greenhouse site contoured to reduce runoff?	Site is contoured or graded to slow runoff and increase water infiltration.		No site improvements to slow runoff and increase water infiltration.		
11.04) Are vegetative buffer strips used to reduce runoff?	Plant material such as grass, shrubs or trees used to slow water movement to streams lakes and wetlands.		The use of a buffer strip has not been considered as a means of slowing water movement off the site.		

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SOIL AND WATER CONSERVATION PRACTICES (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK – 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
11.05) How are drainage ditches and drain tiles managed?	Annually maintained in accordance with local government regulations.	Drainage ditches or drain tiles checked and maintained every 2 to 5 years.	Drainage ditches or drain tiles have not been maintained.		
11.06) How is erosion minimized on roads, parking lots and traffic areas?	Built and maintained to minimize erosion.	A small amount of erosion does occur on the roads and parking lots.	Erosion from the parking lots/roads can be a problem and pose a risk to surface water.		
11.07) How often is the greenhouse site evaluated for runoff problems?	Site is evaluated after each renovation or addition.	Site evaluated every 3 to 5 years, after a number of renovations or additions.	Runoff occurs on a regular basis. No plan to address problem.		
PEST MANAGEMENT PRACTICES					
12.01) How does the grower stay current on new pest management practices and strategies for weeds, insects and diseases?	Attends educational meetings, reads educational materials provided by the university or other reliable sources. At least one new pest management practices adopted on a trial basis each year.	Occasionally attends educational meetings and reads new pest management materials.	Relies on outdated pest management practices.		
12.02) Does the grower consult with a pest management consultant or service during the growing season?	Employs an independent crop consultant throughout the growing season that is knowledgeable of Integrated Pest Management (IPM). Or, Utilize public reports and services from the university, local agribusiness or other reliable providers.		Relies on outdated pest management practices.		

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
12.03) Does the grower review previous growing season pest management activities and results?	Previous pest populations, pest suppression activities/pesticide usage and crop yield/injury are reviewed. Records used for future pest management plans.	No.			
12.04) When available are certified seed or plant material (tubers, crowns, transplants, etc.) used that are insect, weed and disease-free?	Certified or quality seed and planting materials used whenever possible.	Bin-run or uncertified planting materials that are cleaned and treated.	Use saved seed or planting materials that are untreated and potentially infected with insect, weed and/or disease pests.		
12.05) Are pest-resistant and tolerant varieties planted?	Pest-resistant and tolerant varieties are planted when available.	Varieties without resistance and tolerance are planted, resulting in the need for pest suppression practices.			
12.06) Are greenhouses scouted for pests during the growing season?	All greenhouses are scouted on a weekly schedule, by a qualified individual trained in Integrated Pest Management (IPM). Scouting reports and records are on file.	Greenhouses are scouted at critical times, but not on a weekly basis.	Greenhouses are not scouted.		
12.07) How are weeds outside the greenhouse controlled?	Herbicide selection and rates are based on weed species present; scouting and thresholds are used. Where appropriate, cultural and mechanical practices are used to suppress weeds and minimize weed seed survival (cultivation, cover crops, weed barrier, mowing, etc.).	Pre-emergent and post-emergent herbicides used outside of buildings are selected on the basis of past performance, weed history, cost or ease of application.	Herbicides used outside of buildings are selected primarily on the basis of price or ease of application. Little consideration is given to weed species present or runoff/leaching potential or other methods of control.		
12.08) How are weeds inside the greenhouse controlled?	Hand removal, weed barrier or other cultural practices.	Herbicide used with attention to a specific greenhouse use label.	Herbicide used without attention to a specific greenhouse use label.		

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Pest Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk – 1 (significant hazard)	Records or evidence for MAEAP verification	Your Risk
12.09) Are sticky card traps used?	Use sticky cards at regular intervals to detect insect pests.	Sticky cards are used on some crops and read every 2 weeks.	Sticky cards are not used.		
12.10) Are biological control agents used?	Use biological agents to reduce or eliminate the use of pesticides.	Use biological agents in conjunction with pesticides for efficient pest control.	Not considering the use of biological agents.		
12.11) Are human toxicity or health risks considered when choosing pest control materials?	Use only insect growth regulators (IGRs) or other new low-risk compounds instead of more toxic pesticides.	Incorporate IGRs or low-risk compounds into the program when able.	Satisfied with current higher toxicity pesticides. Does not consider human health risk in pesticide selection.		
12.12) Are low restricted-entry intervals (REIs) pesticides (≤12 hours) used?	Low-REI pesticides make up 100 percent of the program.	Low-REI pesticides make up about 50 percent of the program.	Disregard REIs when selecting and applying pesticides.		
12.13) Are pH and alkalinity of water used with pesticides checked?	Check pH and alkalinity of water source every 6 months, realizing that both factors can affect pesticide effectiveness.	Alkalinity and pH of water source used for pesticides checked every 1 to 3 years.	Alkalinity and pH of water source not checked or checked only if the pesticide is not working.		
12.14) Are pest problems spot treated?	Pesticides are applied only to infested plants.	Pesticides are applied to infested plants and surrounding plants.	The entire greenhouse range is treated on a regular basis.		
Pesticide Application					
12.15) How are surface and groundwater protected in and near greenhouses from pesticide contamination?	Pesticide labels with groundwater and surface water advisory statements are followed.		**Labeled directions are not followed.**[19] Spray applied adjacent to or over top of surface water, tile drain inlet or well.	Pesticide labels are followed.	
12.16) Are the purchasers and applicators of Restricted Use Pesticides (RUP) certified applicators?	***The purchaser and applicator of RUP comply with the certification requirements.***		**Non-certified and unsupervised applicators use RUP.**[6]	RUP certification confirmed.	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
12.17) What management practices are used to prevent the development of pest resistance to certain pesticides?	Pesticides with different modes of action are rotated within a season or from one season to the next or used in tank mix where permitted. Pesticides at highest risk of resistance are not used when alternatives are available.	Some but not all pesticide modes of action are rotated or tank mixed. Pesticides at highest risk of resistance are used sparingly.	Pest resistance is not considered when selecting pesticides.		
12.18) Is a spill kit immediately available to pesticide applicators in the greenhouse?	***A spill kit*** containing a shovel, absorbent material, personal protective equipment (PPE) and a container ***is immediately available.***		**No spill kit is available**[6] or no plan is in place to contain spills.	Adequate spill kit present.	
12.19) How is pesticide rinsate disposal handled?	***Excess mixtures or rinsate is used on crop or labeled site at or below labeled rates.***		No plan is in place to deal with excess mixture or rinsate.	Evidence that rinsate is properly managed.	
12.20) What pesticide application records are kept?	***Accurate records maintained of all greenhouse crop applications of pesticides for at least 3 years.***	Partial pesticide records kept. Complete pesticide application records will be kept in the future, for review at the time of reverification.	No records kept. Chemicals used are known by memory or invoices only.	Pesticide records for the past 3 years are on file (or plans to maintain records.) -Application date -Application time -Pesticide brand/product name -Pesticide formulation -EPA registration number -Active ingredient(s) -Restricted-Entry Interval (REI) -Rate per acre or unit -Crop that received the application -Total amount of pesticide applied -Treated area size -Applicator's name -Applicator's certification number -Application location -Application method -Target pest -Carrier volume	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
12.21) How are agriculture pollution emergencies handled?	Call 911, sheriff, fire or emergency services department for personal safety issues. ***All uncontained spills or releases should be reported to the MDARD Agriculture Pollution Emergency Hotline: 1-800-405-0101***, or the MDEQ Pollution Emergency Alerting System: 1-800-292-4706.		**No contact to state or local authorities. Spill discharges directly to surface water.**[4,22]	Emergency plan on file or local emergency telephone numbers are available.	
12.22) Are Safety Data Sheets (SDS) available on site?	SDS are available and employees know their location.	Most SDS are available; not all employees know their location.	SDS are not available.	Evidence of system for making SDS available to employees.	
12.23) Do pesticide applicators read and follow the pesticide label instructions?	***Everyone using pesticides follows label and labeling instructions.***		**Label and labeling instructions are not always followed.**[21]	No evidence of pesticide application contrary to pesticide label instructions.	
12.24) Is pesticide application equipment ever stored with leftover product?	Application equipment is always stored empty.	Occasionally leftover product is stored in application equipment.	Storage of leftover product in application equipment is a standard operating procedure.		
12.25) Is loaded pesticide application equipment ever left unattended?	Sprayer containing pesticide(s) is never left unattended.	Pesticide handlers on occasion are called away from spraying activities.	Leaving sprayers with pesticide unattended is a common occurrence.		
12.27) How often is pesticide application equipment tested?	Application equipment is tested annually to determine if it is working properly.	Application equipment is tested only if there is time.	Application equipment is tested only if it has been broken and repaired.		
12.26) How often is pesticide application equipment calibrated?	Application equipment is calibrated twice a year according to manufacturer's recommendations.	***Application equipment is calibrated every year*** according to manufacturer's recommendations.	Application equipment is calibrated only if there is plant damage or the pesticide doesn't seem to be effective. **Pesticide application equipment is not properly calibrated.**[6]	Evidence of system of calibrating pesticide application equipment at least once per year.	

A boxed risk level indicates the level required for environmental assurance verification.

Bold black print indicates a violation of state or federal regulation.

Bold italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

OUTDOOR PRODUCTION CONTAINER MANAGEMENT

(IF YOU DO NOT HAVE OUTDOOR CONTAINERS, PLEASE SKIP.)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK – 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
13.01) What happens to runoff in production areas with containers?	Runoff is collected, filtered and reused.	Runoff does not pond and does not enter surface water.	Runoff is not collected and is allowed to enter surface water.	No evidence of significant runoff or erosion.	
13.02) Are runoff storage areas sized adequately?	Runoff collection areas can store an average rain event.	Runoff collection areas cannot store an average rain event but do not regularly flood into surface water.	Runoff collection areas overflow regularly and runoff enters surface water.		
13.03) How is the pH of irrigation water managed?	Sulfuric acid is used to lower the pH of irrigation water.	Nitric acid or phosphoric acid is used to lower the pH of irrigation water. Nutrient credits are taken for the acidified irrigation water.	Nitric acid or phosphoric acid is used to lower the pH of irrigation water. Nutrient credits are not taken for the acidified irrigation water.		
13.04) What type of irrigation is used?	Trickle irrigation with in-pot emitters.	Overhead irrigation with scheduled irrigation (split applications).	Overhead irrigation.		
13.05) What fertilizers are used to minimize nutrient loss?	Controlled-release fertilizers used or multiple applications of liquid fertilizer with minimal leaching potential.		Minimal use of controlled-release fertilizers. Use liquid fertilizer with high leaching potential.		
13.06) Is container stock fertigated with overhead sprinklers?	Overhead irrigation with fertigation is avoided on containers.		Overhead irrigation with fertigation is regularly used on containers.		

A boxed risk level indicates the level required for environmental assurance verification.
Bold black print indicates a violation of state or federal regulation.
Bold italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Other Environmental Risks at the Greenhouse Operation

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk – 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
14.01) Is a live species, restricted species or prohibited species on the land or in the waters on the property?	Such species is/are not known to be present.	Such species is/are present: BUT • It was not knowingly introduced. • It was introduced under a permit, OR • It is possessed under a permit.	**Such species is/are present:** • **It was knowingly introduced without a permit.** [15] **OR** • **It is possessed without a permit.** [15]		
14.02) Are there other activities, products, processes/equipment, services, by-products and/or wastes at this greenhouse operation that pose contamination risks to groundwater or surface water?	No additional risk(s) identified.	Plan to mitigate the contamination risk(s).	No plan to mitigate contamination risk(s).	No other environmental risks found at the greenhouse operation.	

Greenhouse (Cropping and Farmstead Systems) Improvement Action Plan

Develop a Greenhouse Improvement Action Plan for risks on the farmstead beginning on the inside cover of this bulletin. Once the plan is implemented, a MAEAP Greenhouse System (Cropping and Farmstead System Verification) can be requested by calling the Michigan Department of Agriculture and Rural Development at (517) 284-5609.

A boxed risk level indicates the level required for environmental assurance verification.
Bold black print indicates a violation of state or federal regulation.
Bold italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

Well Description and Isolation Distances

Table 1. Greenhouse Well Description and Isolation Distances.

Greenhouse Well Information		Isolation Distance (in feet) From:						
Description	Private or Public	Fuel Storage	Pesticide Storage	Fertilizer Storage	Mix/Load Area	Septic System	Other	Other
1								
2								
3								
4								
5								
6								
7								
8								

What is considered a private water supply?

A private water supply provides water to the supplier of the water (e.g., the owner) and includes water for the supplier's drinking water, household use, livestock water, irrigation, etc.

What is considered a public water supply?

In Michigan, wells that provide water to non-family member employees or that service a milkhouse or milkroom are considered public water supplies.

Public water supplies are classified based on capacity and number of employees.

- A Type II public water supply is a non-community supply with at least 15 service connections or which serves 25 or more individuals (employees) on an average daily basis for at least 60 days out of the year.
  - A Type IIa water supply has an average daily production for the maximum month of 20,000 gallons or more.
  - A Type IIb water supply has an average daily production for the maximum month of less than 20,000 gallons.
- A Type III public water supply is one that does not meet the above requirements for the number of service connections or employees.

Table 2. Federal, state and local environmental requirements for operation of this farm business.

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline — 1-800-662-9278, MDARD information — 1-800-292-3939.

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Private pesticide applicator certification	Any persons using or supervising the use of Restricted Use Pesticides (RUP) in the production of an agricultural commodity on their own or their employer's land must be a certified pesticide applicator.	3 years	MDARD/Pesticide and Plant Pest Management Division	
Pesticide safety training for pesticide workers	The federal Worker Protection Standard for agricultural pesticides requires employers of pesticide handlers and workers to train employees on pesticide safety. Agricultural employers must be able to verify compliance.	Each employee must be trained every 5 years	MDARD/PPPM	
NPDES permit CAFO	National Pollutant Discharge Elimination System (NPDES) permit for large concentrated animal feeding operations (CAFOs).	5 years or as noted on permit	MDEQ/Water Bureau	
Farm motor vehicle fuel storage tanks greater than 1,100-gallon capacity (aboveground and belowground tanks)	Fuel storage tanks have to be certified (aboveground) or registered (underground); a site plan has to have been submitted to the LARA before the installation is placed into service. Smaller tanks have other requirements to be met.	Annual	Department of Licensing and Regulatory Affairs (LARA)	
Air use permit	Permit to install and operate equipment or processes which may emit air contaminants (incinerators for burning animal carcasses or manure, and biodigesters and associated equipment are examples).	Before construction	MDEQ/Air Quality Division	N.A.
Groundwater discharge permit	Any discharge of waste or waste effluent into or onto the ground (e.g., egg wash water and milk cooling water [over 10,000 gallons/day] that is discharged), and any livestock facility over 5,000 animal units.	5 years	MDEQ/Water Resources Division	
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulations, ordinances and codes.	Before construction	Local health department	N.A.
Septic permit (house and farm operation)	The first step in the process of determining if a piece of land that does not have municipal wastewater services available can be considered for an on-site septic system.	Before construction	Local health department	N.A.
Land and water interface construction permits	Construction activities (dredging, filling, draining, construction, structure placement) in, across, and under water.	Before construction	MDEQ/Water Resources Division	N.A.
Soil erosion and sedimentation control permit	Earth change activities within 500 feet of a lake or a stream, or that will disturb an area greater than 1 acre in size.	Before construction	County soil erosion permitting agency	
Water use reporting	Agricultural water users with the capacity to withdraw surface or groundwater that exceeds 100,000 gallons per day (70 gallons per minute) are required to report actual water withdrawals annually.	Annual	MDARD	
Identification guides for some species regulated by Part 413.	http://mnfi.anr.msu.edu/invasive-species/aquaticsfieldguide.pdf https://mnfi.anr.msu.edu/invasive-species/InvasivePlantsFieldGuide.pdf			

Table 2. Federal, state and local environmental requirements for operation of this farm business.

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline — 1-800-662-9278, MDARD information — 1-800-292-3939.

Environmental Regulatory requirements	Description	Frequency	Administering Agency	Your Expiration Date
Water Withdrawal Assessment – new or increased large quantity	The Water Withdrawal Assessment Tool (WWAT) is designed to estimate the likely impact of a water withdrawal on nearby streams and rivers. Use of the WWAT is required of anyone proposing to make a new or increased large quantity withdrawal (over 70 gallons per minute) from the waters of the state, including all groundwater and surface water sources, prior to beginning the withdrawal. The WWAT and registration site is: **www.deq.state.mi.us/wwat**.	Before Water Withdrawal	MDEQ Water Resources Division	The registration is valid for 18 months
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulations and ordinances and codes.	Before construction	Local health department	
Other Environmental Guidelines	**Description**		**Administering Agency**	**Your Expiration Date**
Manure management and utilization	The Michigan Right to Farm Act (Act 93 of 1981) requires the establishment of Generally Accepted Agricultural andManagement Practices (GAAMPs). Agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance litigation. The GAAMPs are reviewed annually. The latest GAAMPs can be accessed at: **www.michigan.gov/mdard**.		MDARD	
Pesticide utilization and pest control				
Nutrient utilization				
Site selection and odor control for new and expanding livestock production facilities				
Irrigation water use				
Farm market				
MAEAP verification: Livestock, Farmstead, Cropping and the Forest, Wetlands and Habitat Systems.	MAEAP systems verification is valid (P.A. 1 & 2, 2011) for 5 years. MAEAP verification in good standing is dependent on following the practice specific to each system, being in conformance with the applicable GAAMPs, an annual plan review and update (livestock system) and updates as necessary as conditions change on the farm.		MDARD	

Table 3. Legal Citations for Environmental Risks in Greenhouse◆A◆Syst.

Footnote	Michigan Law	Description
1	Public Health Code, Public Act 368 of 1978	Part 127: Water Supply and Sewer Systems
2		Part 138: Medical Waste Regulatory Act
3	Safe Drinking Water Act, Public Act 399 of 1976	
4	Natural Resources and Environmental Protection Act 451 of 1994	Part 31: Water Resources Protection
5		Part 55: Air Pollution Control
6		Part 83: Pesticide Control
7		Part 85: Fertilizers
8		Part 111: Hazardous Waste Management
9		Part 115: Solid Waste Management
10		Part 117: Septic Waste Servicers
11		Part 121: Liquid Industrial Waste
12		Part 169: Scrap Tires
13		Part 201: Environmental Response
14		Part 327: Great Lakes Preservation
15		Part 413: Wildlife Conservation
16	Bodies of Dead Animals Act, Public Act 239 of 1982 as amended	
17	Fire Prevention Code Public Act 207 of 1941	Storage and Handling of Flammable and Combustible Liquids
18	Grade A Milk Law, Public Act 266 of 2001	
19	Michigan Department of Agriculture and Rural Development Pesticide Regulation 637	Pesticide Use
20	Michigan Department of Agriculture and Rural Development Regulation 642	On Farm Fertilizer Bulk Storage
	Federal Law	
21	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	
22	Title III of the Superfund Amendments and Reauthorization Act of 1986, also known as the Emergency Planning and Community Right-to-Know Act	
23	Worker Protection Standard for Agricultural Pesticides	
24	Clean Water Act, Oil Pollution Regulation	
25	Food Safety Modernization Act Food Safety Rule	

Crop Commodities					
Crop Name	**Acres**	**Crop Name**	**Acres**	**Crop Name**	**Acres**
Alfalfa		Cucumbers, Fresh		Oats	
Apples		Cucumbers, Pickling		Peaches	
Apricots		Dry Beans		Pears	
Asparagus		Fruit, Other		Potatoes	
Blueberries		Grapes, Juice		Rye	
Carrots		Grapes, Wine		Small Grain, Other	
Cherries, Sweet		Green Beans		Soybeans	
Cherries, Tart		Greenhouse, Annual		Squash/Pumpkin	
Christmas Trees		Greenhouse, Perennial		Sugar Beets	
Clover, Seed		Greens, Herbs		Sunflower	
Corn, Grain		Hay/Pasture		Vegetable, Other	
Corn, Seed		Hops		Wheat	
Corn, Silage		Mixed Garden		Other:	
Corn, Sweet		Nursery		Other:	
Note: Express acres to the closest quarter acre.					

	Cropping Acres	Farmstead Acres	Livestock Acres	Greenhouse Sq. Feet
Total Acres Included in CNMP or NMP				
Total Acres Receiving Manure in CNMP or NMP				
Total Acres (or Square Feet) Receiving Fertilizer				
Total Acres (or Square Feet) Receiving Pesticides				
Total Acres (or Square Feet) Irrigated				
Approximate Acres of Buffer/Filter Strips				
Total Acres (or Square Feet) of Cover Crop (Annual)				
Total Acres (or Square Feet) of No-Till/Zone Till/Grass cover				
Total Acres (or Square Feet) of Conservation Tillage				
Total Number of Gullies Stabilized (Grade/Stabilization Waterways)				
Total Square Feet in Production Area (Greenhouse Only)	N/A	N/A	N/A	
Milkhouse Waste Discharge Eliminated (gallons)				N/A
Livestock Exclusion (feet)				N/A
Silage/Feed Leachate Runoff Acres (size of pad)				N/A
Total Volume of Manure Produced (gallons)				N/A
Total Volume of Manure Being Applied (gallons)				N/A
Total Volume of Manure Sold (gallons)				N/A
Total Volume of Given Away (gallons)				N/A
Pounds of N Available in Manure				N/A
Pounds of P Available in Manure				N/A
Pounds of K Available in Manure				N/A

Farmstead / Greenhouse	In Pounds	In Gallons
Total Amount of Fuel Stored		
Fertilizer Storage Capacity (Max stored on-hand at one time)		
Pesticide Storage Capacity (Max stored on-hand at one time)		
Number of Wells Meeting the Distance Regulations on Farmstead		
Farmstead Only		
Are Extremely Hazardous Substances (EHS) stored on the farm at the threshold limit?	☐ Yes ☐ No	

Notes:

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Major revision (destroy old). 10:18 – 600 – HJ/BP

CROP·A·SYST

CROP AND VEGETABLE PRODUCERS

FAS 110 · October 2018 · Destroy Old

For MAEAP Verification:
Contact the MAEAP Office at the Michigan Department of Agriculture & Rural Development

(517) 284-5609

nutrient stewardship

MAEAP

MICHIGAN STATE UNIVERSITY | Extension

Crop◆A◆Syst

Cropping System Improvement Action Plan

Risk question	List high-risk practice(s) from Crop◆A◆Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification?	Management practice to reduce risk. (Include potential sources of technical and financial assistance.)	Action plan	
				Planned completion date	Indicate date when completed
1.04	(example) Realistic yield goals not calculated for all fields.	Yes	Summarize yield histories by field to establish realistic yield goals for corn, soybeans and wheat.	Feb. 2018	**(√)** Completed Feb. 20, 2018

(continued on next page)

Crop◆A◆Syst

Cropping System Improvement Action Plan (continued)

Risk question	List high-risk practice(s) from Crop◆A◆Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification?	Management practice to reduce risk. (Include potential sources of technical and financial assistance.)	Action plan	
				Planned completion date	Indicate date when completed

(continued on next page)

Crop◆A◆Syst

Cropping System Improvement Action Plan (continued)

Risk question	List high-risk practice(s) from Crop◆A◆Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification?	Management practice to reduce risk. (Include potential sources of technical and financial assistance.)	Action plan	
				Planned completion date	Indicate date when completed

I understand that this cropping system assessment (Crop◆A◆Syst) and corresponding Cropping System Improvement Action Plan were developed on the basis that I have disclosed, to the best of my knowledge, all information pertaining to my cropping operations.

Farmstead address:

Street_____

City_____

State_____ Zip_____

Watershed name_____

Producer's signature _____

Date _____

Crop◆A◆Syst conducted by:

Name_____

Title _____

Organization_____ Date_____

MAEAP Verification Action Plan	Date
Target date for MAEAP verification of **Cropping System**	
Target date for MAEAP verification of **Farmstead System**	
Target date for MAEAP verification of **Livestock System**	
Target date for MAEAP verification of **Forest, Wetlands, & Habitat System**	

For MAEAP verification, contact MAEAP office at the Michigan Department of Agriculture and Rural Development: 517-284-5609.

Crop◆A◆Syst

Introduction

In 2011, the Michigan Agriculture Environmental Assurance Program (MAEAP) was codified in law as set forth in P.A. 451, Part 82 of the Natural Resources & Environmental Protection Act (NREPA). The Crop◆A◆Syst tool is updated annually to incorporate the current MAEAP Standards for this system. The tool also includes applicable Generally Accepted Agricultural and Management Practices (GAAMPs) established under Michigan Right to Farm. The completed A Syst tool and associated plan and practices meet the requirement of a Conservation Plan, as defined in Part 82 of NREPA and referenced in Part 87 of NREPA. This statute also ensures producer confidentiality for any information provided in connection with the development, implementation or verification of a conservation plan or associated practices and is exempt from disclosure under the Freedom of Information Act.

Crop◆A◆Syst will assist a producer to develop and implement a management plan that prevents contamination of groundwater and surface water resources and maintains economic crop production. Practices will be consistent with identified Michigan Right to Farm guidelines and applicable state and federal environmental regulations.

Nutrients used in agricultural production come from chemical fertilizers and natural sources such as manure, legumes and biosolids (sewage sludge). All nutrients, whether synthetic or naturally occurring, can become mixed with surface water or groundwater by natural processes such as runoff and leaching. Nitrate contamination of groundwater and phosphorus contamination of surface water can be problems in Michigan. Crop◆A◆Syst will assess current nutrient management practices and identify alternative management practices that, when implemented, will reduce nutrient losses to the environment.

Virtually all crops produced in Michigan may be threatened by serious pest problems – weeds, insects and disease-producing organisms. Producers are encouraged to adopt pest management practices that achieve the desired commodity quality and yield while minimizing any adverse effects on non-target organisms, humans, and soil and water resources.

Crop◆A◆Syst will assess current pest management practices and identify alternative management practices that, when implemented, will reduce negative impacts to the environment.

The Michigan Agriculture Environmental Assurance Program is a comprehensive, proactive and voluntary agricultural pollution prevention program. It takes a systems approach to assist producers in evaluating their farms for environmental risks. Environmentally assured farms are eligible for various incentives and recognitions.

The Michigan Right to Farm Act authorizes the Michigan Commission of Agriculture and Rural Development to develop and adopt GAAMPs for farms and farm operations in Michigan. These voluntary practices are based on available technology and scientific research to promote sound environmental stewardship. The current Right to Farm GAAMPs are posted on the Michigan Department of Agriculture and Rural Development (MDARD) Web site: **www.michigan.gov/mdard**.

Producers who complete the Crop◆A◆Syst assessment will be able to determine what management and record-keeping changes (if any) will be needed for their Cropping System to be environmentally assured through MAEAP. Once a producer develops and implements a Cropping System Improvement Action Plan to address the risks indicated by the Crop◆A◆Syst assessment, he or she can contact MDARD at 517-284-5609 to request a MAEAP Cropping System verification inspection. An MDARD inspector will schedule a site visit to complete the verification process.

P.A. 451, Part 82, ensures the confidentiality of the producer information provided to the MDARD for verification. Any information connected with the development, implementation or verification of a conservation plan or conservation practice is confidential.

The owner of a MAEAP verified Cropping System will be eligible for various incentives and can enjoy the peace of mind that comes with knowing that Cropping System practices are consistent with the identified current Right to Farm GAAMPs. Verified Cropping Systems are positioned to achieve regulatory compliance with state and federal environmental laws.

Similar incentives are available for producers who have environmentally assured their other systems. Contact the local conservation district, MSU Extension or Natural Resources Conservation Service (NRCS) representative for a list of currently available incentives and information on how to get started.

Crop◆A◆Syst

What is the Crop Assessment System?

The Crop Assessment System (Crop◆A◆Syst) is a series of risk questions that will help assess how effectively crop management practices protect groundwater and surface water resources. The risk questions are grouped in the following sections:

	Cropping System Improvement Action Plan
1	Nutrient Management Practices – General
2	Soil and Water Conservation Practices
3	Pest Management Practices
4	Water Use Reporting
5	Crop-specific Management Practices
6	Pasture Management Practices
7	Irrigation Management Practices
8	Other Environmental Risks in the Cropping System

Each risk question assesses the impact of cropping practices on groundwater and surface water resources. The risk question answers indicate whether management practices have a low, medium or high risk of contamination. Producers are generally recommended to adopt the low-risk management practice.

Risk questions that address management practices that are regulated by state or federal law indicate **illegal practices with black bold print**. The numbered footnotes indicate what regulation(s) is (are) violated (refer to Table 2, page 40).

Risk questions that address management practices covered by the GAAMPs indicate a management practice consistent with a specific GAAMP with ***blue bold italic print***.

Finally, a blue box indicates the management level(s) required for MAEAP verification.

MAEAP management requirements are aligned with state and federal environmental regulations. The GAAMPs and environmentally based agronomic management practices are supported by research. The records or evidence that indicate the approved management practices have been implemented on the farm are listed in the far-right column. This evidence will provide the basis for awarding environmental assurance through MAEAP.

Agricultural representatives (both public and private) can assist farmers to make the appropriate management changes to become environmentally assured through MAEAP.

How Does Crop◆A◆Syst Work?

1) Select all relevant risk question sections for the farm.

2) Answer the risk questions by selecting the answer that best describes management practices used on the farm. Indicate the risk level in the column to the right. Skip any questions that don't apply to the Cropping System.

   Note: for MAEAP verification, complete the risk questions with a Crop◆A◆Syst trained individual. MAEAP technicians are located in the conservation district offices.

3) After completing each section of risk questions, list the practices that present a high risk of contaminating groundwater and surface water resources in the Cropping System Improvement Action Plan (printed inside the front cover of the bulletin). Also include any medium-risk practices that do not meet MAEAP verification requirements.

4) In the Cropping System Improvement Action Plan, list:
   - Management practice(s) that are planned for implementation that will reduce the identified risk.
   - Sources of technical and financial assistance.
   - Target dates for accomplishing the changes.
   - Target date for MAEAP verification of the Cropping System.

A Few Final Words

The key to Crop◆A◆Syst is that, once environmental risks are identified, the plan is implemented to reduce the risk(s). Some of the stewardship practices that will reduce risks may cost very little and take very little time to implement. Other practices may involve additional cost and may not be implemented for a few years. It is important, however, to have a plan to follow. Once a plan is developed and changes are implemented to address the risks, the farm is ready for MAEAP Cropping System verification.

NUTRIENT MANAGEMENT PRACTICES - GENERAL

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.00) Has there ever been a formal Right to Farm complaint against the farm?	There has never been a Right to Farm complaint or the concern was not verified or the concern was resolved.		There was a formal Right to Farm Complaint and the concern was not resolved.	Producer's verbal indication of compliant history.	
1.01) How often are fields tested for nutrient levels (P, K, Ca, Mg and pH)?	***All fields are sampled and tested on a regular basis,*** at 1 to 4 years, depending on crops being grown, and the cropping system.	Most fields are sampled and tested every 1 to 4 years. Producer plans to bring all field soil tests up to date. Manure is not applied to fields without a current soil test.	Fields have not been tested within the past 4 years.	Field names or map. Acres in the cropped portions of the field. Up-to-date soil test reports, or schedule to bring all test us to date.	
1.02) Do soil sampling procedures adequately represent field conditions?	One composite sample is taken from uniform field areas of 15 to 20 acres or from uniform management areas.	One composite sample is taken from uniform field areas of 20 to 40 acres.	One composite sample is taken from areas greater than 40 acres.	Predominant soil types/soil maps. Cropping histories. Proper soil sampling procedure.	
1.03) Is the soil pH maintained in the desirable range for the crop(s) being grown?	When crops with different target pHs are being grown in rotation, soil pH is maintained for the crop with the highest target pH. OR, For perennial crops, soil pH is maintained in desirable range.	The soil pH is adjusted for the current crop. Rotational crops are not considered.	Soil pH is not maintained in the desirable range.		
1.04) How are crop yield goals established?	Realistic yield goals (achieved 50% of the time) are established based on soil potential and level of crop management.	No yield goals are established.	Excessively high yield goals that have never been achieved.	Previous crops grown over the past three to five years. Actual harvest yields or estimated yields. Running average yield for each of the crops commonly grown in the field. Realistic yield goals for each crop.	

A boxed risk level indicates the level required for environmental assurance verification.

Bold black print indicates a violation of state or federal regulation.

Bold Italic blue print indicates a management practice consistent with a specified 2018 Right to Farm (RTF) Generally Accepted Agricultural and Management Practice (GAAMP).

NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORD OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.05) How are all sources of nutrients considered when making fertilization decisions?	***Credit taken for nutrients supplied by organic matter, legumes and manure or other biological materials*** (biosolids). Fertilizer rates are reduced accordingly.	When organic matter, legumes manure or other biological materials (biosolids) are used, fertilizer rates are sometimes reduced.	When organic matter, legumes, manure or other biological materials (biosolids) are used, rates are not reduced.	Written records indicate nutrient credits utilized.	
1.06) How are fertilizer application rates determined?	***Consistent with Michigan State University*** (MSU) ***recommendations.*** When MSU recommendations are not available, other land-grant university recommendations developed for the region may be used.	Fertilizer rates are based on soil testing lab recommendations but not consistent with MSU recommendations.	Fertilizer application rates not based on soil testing. Application rates often or always exceed MSU recommendations or crop removal rates.	Applications consistent with MSU recommendations (MSU soil test printout or calculated MSU recommendations on file.) When MSU recommendations are not available, other land-grant university recommendations developed for the region may be used.	
1.07) How are nutrient management plans for each field annually developed and followed?	Annual nutrient plan is developed for each field that meets crop nutrient needs and minimizes loss of nutrients to the environment.	A nutrient plan is developed each year for each crop species with like yield goal and crop rotation. Soil tests are up to date.	Nutrient plan is not developed, or the same plan is used for more than four years.	Annual nutrient plan by field or by crop grown.	
1.08) Is fertilizer application equipment checked for proper adjustment?	***Application equipment is checked for rate of application and placement.*** Over, and under applications are monitored and corrected.		Application equipment is not checked.	Name of person responsible for fertilizer applicator adjustments and the dates of adjustments.	

A boxed risk level indicates the level required for environmental assurance verification.
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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORD OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.09) What soil nutrient management records are kept?	***Records of soil test reports and quantities of nutrients applied to individual fields are maintained.*** Also crop yields are recorded for evaluating performance and setting future yield goals.	Partial nutrient management records are kept. Complete nutrient management records will be kept in the future, for review at time of reverification.	Minimal or no nutrient management records kept.	Three years of records – or five years, if applying manure - or plans to begin keeping records. Soil fertility tests and/or plant analysis results. Previous crop grown and a yield harvested. Date(s) of application(s). Nutrient composition of fertilizer or other material used. Amount of nutrient-supplying material applied per acre. Method of application and placement of applied nutrients. Vegetative growth and cropping history of perennial crops.	
1.10) When not in use, where are loaded planting and spray supply vehicles (trailers and trucks) parked to protect water resources from accidental fertilizer and pesticide spills and mischievous activities?	Supply vehicle is returned to a secure location when not in use. Fertilizer and pesticides (including treated seed) are properly stored more than 150 feet down gradient from any well.		Fertilizer and pesticide (including treated seed) supply vehicle is left in an unsecured location. Or, Fertilizer and pesticides are **stored less than 150 feet from any well.** [1]	Map showing where vehicle should not be parked adjacent to any well. No evidence vehicles left in an unsecured location.	
1.11) Are poly tanks used as intended?	Yes, Vertical (upright) tanks are used for stationary fertilizer storage, and horizontal tanks with tie-down features are used for stationary storage and/or transportation application.		Vertical tanks are used as mobile nurse tanks or other transportation applications. Vertical tanks are designed for stationary storage.		

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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.12) Are poly tanks inspected periodically for structural soundness?	Poly tanks are inspected for crazing (spider webbing) and cracking in the spring and again at the end of the season. Damaged tanks are replaced or used for water.	Poly tanks are inspected and periodically replaced as necessary	Tanks are not inspected regularly. High potential for tank failure is present.		
NITROGEN MANAGEMENT PRACTICES					
1.13) How are Nitrogen (N) fertilizer applications matched to the demand of the crop and the conditions of the soil?	Split or multiple nitrogen fertilizer applications are based on pre-sidedress nitrate tests (PSNT) or N credits for manure, legumes and other biological materials.	Split or multiple nitrogen fertilizer applications are based on past practices.	Single application is made where leaching or runoff potential is high.		
PHOSPHORUS MANAGEMENT PRACTICES					
1.14) How are Phosphorus (P) fertilization rates determined?	***Based on soil tests or plant tissue analysis using Michigan State University recommended rates.***	P fertilization is based on past practices, without regard to soil test P levels.	P fertilization is based on applying as much as is affordable to ensure the best possible yields.	P management consistent with Nutrient Management GAAMPs. Note: When soils have a Bray P1 test of 80-100 lbs./acre (40 to 50 ppm), fertilizer recommendations for P205 will likely be zero for most crops and yields grown in Michigan.	

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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
1.15) If there are instances where dilute wastewater (≤1% solids) is applied to fields testing over 150 ppm P soil test, can the farmer document appropriate conditions for application?	***-Growing plants in the application area. -Wastewater application rate supplies ≤ 75% of P crop removal. -Annual sampling of wastewater P content. -Soil P test levels decline over time. -No other P applied to field. -Tile drained fields monitored for manure flow.***	Appropriate conditions are partially met.	Appropriate conditions for dilute wastewater application are not present.	Appropriate dilute wastewater management demonstrated. The CNMP guidelines and NRCS Nutrient Management Practice Standard 590 require the use of the Michigan Phosphorus Index (PI) when wastewater is applied to fields testing over 150 ppm P soil test. A PI of 17 or lower is needed.	
1.16) Where is the Phosphorus (P) fertilizer placed?	For row crops, all P is banded as a starter fertilizer at planting time. For other crops, P is surface broadcast but incorporated when possible to prevent runoff.	P fertilizer is surface applied and not incorporated where runoff potentials are limited.	P fertilizer is surface applied and not incorporated where runoff potentials are high.		
1.17) How often is commercial Phosphorus (P) fertilizer applied on frozen or snow-covered fields?	P fertilizer is never broadcast on frozen or snow-covered fields.	***Broadcast applications are avoided on frozen or snow-covered fields*** and are not part of the nutrient management plan.	P fertilizer is often broadcast on frozen or snow-covered fields.	Date(s) of application(s) of P fertilizers.	

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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF YOU DO NOT USE MANURE, SKIP THIS SECTION.)					
1.18) What manure management records are maintained?	Complete application ***records of manure analysis, soil test results and rates of manure application for individual fields are maintained.***	A minimum of one season of manure application records, or partial application records have been kept. Complete manure application records will be kept immediately and will be available for review at the time of re-verification.	Minimal or no records are maintained.	Additional nutrient management records that are needed. • Date(s) of manure application and incorporation when applicable. • Rate of manure application. • Weather conditions during application of manure (e.g., sunny, 70°F). • Field conditions during application of manure (wet, dry, frozen, etc.) • Manure/wastewater quantities produced and nutrient analysis results. • Records of rental or other agreements for application of manure/wastewater on land not owned by the producer. • Records of manure/wastewater sold or given away to other landowners.	
1.19) How is the nutrient content of manure determined?	***Laboratory analysis for percent dry matter (solids), ammonium N, and total N, P and K.***	Book values or standard nutrient content values used.	Manure nutrient content is unknown or not considered.	All manure analyses or book values on file.	
1.20) How are desired manure application rates achieved?	Manure analysis (book value, manure test or mass balance) and ***field application rates are known.***		Manure application rate is not known.	Rate of manure applied known for all spreaders. Records indicate date of calibration.	

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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF YOU DO NOT USE MANURE, SKIP THIS SECTION.)					
1.21) How is manure, and/or compost, generally applied to fields?	***Manure, and or compost, is incorporated within 48 hours or injected into the soil, and/or conservation practices*** (residue management, cover crops, perennial crops etc.) ***are used to protect against runoff and erosion losses to surface waters.***	Manure, and/or compost, is generally surface applied and conservation practices are employed to reduce the risk of runoff.	Manure, and/or compost, is applied in a manner that results in ponding, soil erosion losses, or manure runoff to adjacent property, drainage ditches or **discharge directly to surface water.** [4]	Manure, and/or compost, application records.	
1.22) How are streams, wetlands, farm ditches and other water bodies protected from manure runoff?	***Manure is incorporated within 48 hours or injected. Or, surface applications are not done within 150 feet of surface water.*** Or, filter strips, riparian buffer strips, and other conservation practices are maintained between fields and surface waters on the farm and around surface water inlets.	Conservation practices are maintained on some fields.	Manure is applied within 150 feet of surface waters and not incorporated without conservation practices. And/or manure occasionally reaches neighbor's property.	Field maps with setbacks and conservation practices identified. Records of manure incorporation.	
1.23) In the field, how is manure temporarily stockpiled in relation to surface water?	***Manure stockpiles are kept at least 150 feet from surface waters or areas subject to flooding unless conservation practices are used to protect against runoff and erosion losses to surface waters.***		Manure stockpiles are closer than 150 feet to surface waters or areas subject to flooding, and conservation practices are not used to protect against **runoff and erosion losses to surface waters.** [4]	Appropriate temporary manure stacking demonstrated in the field for surface water protection.	

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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF YOU DO NOT USE MANURE, SKIP THIS SECTION.)					
1.24) In the field, what management practices are used to reduce odors and pests from manure temporarily stockpiled?	***Stockpiled manure is at least 150 feet away from non-farm homes and stockpiled manure is covered with a tarp, straw, woodchips, or other materials, or additives are used to reduce odors and pests.***	***Stockpiled manure is at least 150 feet away from non-farm homes.***	Stockpiled manure is closer than 150 feet to non-farm homes.	Appropriate manure stacking demonstrated for odor and pest control.	
1.25) In the field, how long is manure temporarily stockpiled?	***Manure is spread as soon as field and weather conditions allow, and does not exceed six month, or if covered with an impermeable cover, twelve months.***		Manure stockpiled for more than six months without a cover, or more than twelve months with an impermeable cover.	Manure not stockpiled for more than 365 days. Refer to manure application records. For CNMP's manure may be stockpiled in the field for 20 days on soils with a High N Leaching index and 90 days on soils with a Medium N Leaching index. NRCS Standard 634.	
1.26) How are manure nitrogen (N) application rates managed?	***Manure and N fertilizer are applied at rates that do not exceed the N requirements of the crop*** and are credited toward fertilizer needs. Presidedress nitrate test (PSNT) may be part of the program.	Manure nitrogen credits are considered but not to their full extent.	Commercial nitrogen is not reduced to account for manure nitrogen credits.	Manure rates do not exceed crop N needs, consistent with GAAMPs.	

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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
MANURE MANAGEMENT PRACTICES (IF YOU DO NOT USE MANURE, SKIP THIS SECTION.)					
1.27) How are manure phosphorus (P) application rates managed?	***High testing fields (>150 ppm Bray P1) do not receive manure, and fields between 75 and 150 ppm P receive no more than four years, crop P205 removal if one-year application, is impractical.***	High testing fields (>150 ppm Bray P1) removed from spreading plan, but crop removal rates are not followed.	Manure application rates are not based on soil tests and/or crop removal rates.	Manure rates do not exceed crop P needs. If developing a CNMP, refer to USDA-NRCS 590 Standard.	
1.28) How are fields selected for spreading on frozen and snow-covered ground?	No applications on frozen or snow-covered ground without injection or incorporation.	Manure Application Risks Index (MARI) has been completed for each field receiving manure on frozen or snow-covered ground. Frozen or snow-covered fields receiving manure have met MARI criteria for Low or Very Low rating and ***no liquid manure is applied on slopes greater than 3%, and no solid manure is applied to slopes over 6%.***	Applications are made to fields where runoff to water resources may occur.	MARI completed for each field receiving winter manure application, or spreading plan does not include winter spreading.	
1.29) How are field tiles managed to prevent manure discharge to surface water?	***Liquid manure is prevented from reaching tile lines.*** Management practices are in place to prevent runoff to surface inlets. Tile line outlets are monitored.		Tile outlets are not monitored for manure discharge.	Tiled field identified on map. Record of tile flow before and after application (flow, rate, color and odor).	

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NUTRIENT MANAGEMENT PRACTICES – GENERAL (CONTINUED)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK - 1 (SIGNIFICANT HAZARD)**	**RECORDS OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
BIOSOLIDS MANAGEMENT PRACTICES (IF YOU DO NOT USE BIOSOLIDS, SKIP THIS SECTION)					
1.30) Does the farm have an odor management plan?	An odor management plan has been developed and implemented. ***Farm is managed to minimize odor impacts upon neighbors.***	A partial odor management plan has been developed and implemented.	No odor management plan has been developed.		
1.31) Has nutrient content information on the biosolids applied to the farm been received?	Received laboratory analysis for percent dry matter (solids) ammonium N (NH_4-N) and total N, P and K, and utilize nutrient credits when planning nutrient program.		Have not received any biosolids analysis information.	Biosolids analyses on file.	
1.32) How are the rates of biosolids (in gallons or dry tons per acre) and applied biosolids nutrients known?	Received actual biosolids application rates from the biosolids generator or its land application contractor. Nutrient rates are consistent with MSU recommendations.		Have not received any biosolids rate or nutrient application information.	Biosolids application rates on file.	
SOIL AND WATER CONSERVATION PRACTICES					
2.01) Have environmentally sensitive areas been identified (land near surface water, highly erodible soils, soils with high leaching or runoff potentials, wells, surface drains and inlets) that require additional management when applying nutrients and pesticides?	Environmentally sensitive areas are identified. Family members, employees, and contractors are aware of and understand the management practices to protect these areas.	Some environmentally sensitive areas are identified.	Environmentally sensitive areas are not considered.	Areas identified on field maps with appropriate management or setbacks. - Areas next to surface waters. -Fields with shallow groundwater. -Fields with water wells. -Areas near surface water inlets. -Fields with highly erodible soils. -Fields with highly leachable soils. -Fields with high runoff potential. Training/communications plan to inform workers and contractors of appropriate management or setbacks.	

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Soil and Water Conservation Practices (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
2.02) Is soil erosion under control on the farm fields?	Soil erosion losses are within tolerances as documented by the Revised Universal Soil Loss Equation (RUSLE2) and the Wind Erosion Prediction System (WEPS). Minimal evidence of erosion and no evidence of erosion of concentrated water flows. Cover crop may be in place.	RUSLE2 and WEPS are run on fields that are not: In pasture or hay ground, or no-till planting systems. Receiving fall tillage, with >30% residue on less than 12% slopes. Receiving more than one pass fall tillage that leaves fields rough with >40% residue and less than 8% slopes. And regardless of fall tillage, spring tillage leaves > 20% residue. And for all of the above there is no evidence of sheet, rill or gully erosion.	Excessive soil erosion is occurring on the farm.	RUSLE2 and WEPS calculations completed and on file.	
2.03) Are all streams, wetlands, farm ditches, and other bodies of water on the farm protected from polluted runoff and sediment with conservation practices?	Filter strips, riparian buffer strips, grassed waterways and other conservation practices are maintained between fields and all surface waters on the farm.	Conservation practices are maintained on some fields.	No conservation practices are maintained. Farm is immediately next to surface waters, drainage ditches and roads.		
2.04) Are cover crops planted to prevent soil erosion, trap nutrients and pesticides, and improve soil quality?	Cover crops are included in the crop rotation to protect soil and water resources and control erosion.	Cover crops are used occasionally.	Cover crops are not used.		

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Soil and Water Conservation Practices (continued)					
Risk question	**Low Risk – 3 (recommended)**	**Medium Risk – 2 (potential hazard)**	**High Risk - 1 (significant hazard)**	**Records or evidence for MAEAP verification**	**Your Risk**
2.05) Are soil quality indicators evaluated?	Soil quality indicators (e.g., earthworm populations, water infiltration rates, soil compaction, percent plant and residue cover, pH, cation exchange capacity [CEC] and percent organic matter) are evaluated on all fields.	Some soil quality indicators are evaluated.	No soil quality indicators are evaluated.		
2.06) Are conservation and management practices routinely inspected and evaluated?	Owner or trained individual routinely inspects and evaluates conservation and management practices.	Conservation and management practices are informally evaluated during field operations.	Practices are not inspected nor evaluated.		
Pest Management Practices					
Continuing Education and Knowledge					
3.01) How does the grower stay current on new pest management practices and strategies for weeds, insects and diseases?	Attend educational meetings, read educational materials provided by the university or other reliable sources. At least one new pest management practices adopted on a trial basis each year.	Occasionally attend educational meetings and read new pest management materials.	Rely on outdated pest management practices.		

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Pest Management Practices

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Continuing Education and Knowledge					
3.02) Does the grower consult with a pest management consultant or service during the growing season?	Employs and independent crop consultant throughout the growing season that is knowledgeable of IPM. OR, Utilizes public reports and services from the university, local agribusiness or other reliable providers.	Occasionally attends educational meetings and reads new pest management materials.	Relies on outdated pest management practices.		
Pest Prevention and Avoidance					
3.03) Does the grower review previous growing season pest management activities and results?	Previous pest populations, pest suppression activities/pesticide usage and crop yield/injury are reviewed. Records used for future pest management plans.	No.			
3.04) When available, are certified seed or plant materials (tubers, crowns, transplants, etc.) used that are insect, weed and disease-free?	Certified or quality seed and planting materials used whenever possible.	Bin-run or uncertified planting material that is cleaned and treated.	Use saved seed or planting materials that is untreated and potentially infected with insects, weed and/or disease pests.		
3.05) Are crops (and plant families) rotated to break pest cycles and to maximize crop yields?	Three year or longer rotations are utilized to break pest cycles and to reduce the need for pest suppression practices.	Short (< 3 year) rotations are utilized because of intensive cropping systems. Cover crops utilized whenever possible to improve system.	No rotation followed. Continuous cropping system results in increased pest pressures and reduced yields.		

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Pest Management Practices (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk - 1 (significant hazard)	Records or evidence for MAEAP verification	Your Risk
Pest prevention and avoidance (continued)					
3.06) Are pest resistant and tolerant varieties planted?	Pest resistant and tolerant varieties are planted when available.	Varieties without resistance and tolerance are planted, resulting in the need for pest suppression practices.			
3.07) Are planting dates adjusted to avoid early and late season pests? (Example fly-free date for wheat planting and early sweet corn for earworm avoidance.)	Planting dates are adjusted to avoid pest damage.	Planting dates are not based on the need to manage pests.			
Pest Monitoring					
3.08) Are fields scouted for pests during the growing season?	All fields are scouted on a weekly schedule, by a qualified individual trained in IPM. Scouting reports and records are filed.	Fields are scouted at critical times, but not on a weekly basis.	Fields are not scouted.		
3.09) Are weather conditions relevant to pest management monitored (i.e., air and soil temperature, precipitation, soil moisture, wind speed and direction, leaf wetness, etc.)?	On-farm weather station(s) provide data to assist with crop and pest management decisions. OR, MSU Enviro-weather (**www.enviroweather.msu.edu**) or other weather-based models are used to assist with crop and pest management decisions.	Consumer weather information used for crop and pest management decisions.	Weather conditions are not considered when making crop and pest management decisions.		
Pesticide Application					
3.10) Are soil characteristics and field conditions considered when making pesticide applications?	Soil characteristics (texture and organic matter) and field conditions (slope and moisture) are assessed when deciding on pesticide application practices Site-specific or variable-rate technology may be used.	Whole-field application rates are based on the most vulnerable soil type in the field.	Pesticides are applied at full labeled rates without regard to vulnerable soil characteristics or field conditions.		

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.11) How are surface water and groundwater protected in and near fields from pesticide contamination?	Pesticide labels with groundwater and surface water advisory statements are followed.		**Labeled directions are not followed.**[18] Spray is applied adjacent to, or over the top of, surface water, tile drain inlet or well. Field restrictions for shallow groundwater are ignored.	Field maps indicating pesticide label setbacks (2.01) and shallow groundwater restrictions are followed.	
3.12) Are leaching/runoff and toxicity potentials considered when making pesticide decisions?	Pesticides with the lowest potentials for leaching, runoff and non-target toxicity are always selected for use in fields.	Leaching/runoff and toxicity potentials are occasionally considered when selecting soil-applied pesticides.	Pesticide choice is not based on leaching/runoff and toxicity potentials. Only cost and effectiveness are considered.		
3.13) Are the purchasers and applicators of restricted-use pesticides (RUP) certified applicators?	***The purchaser and applicator of RUP comply with certification requirements.***		**Non-certified and unsupervised applicators use RUP.** [6]	RUP certification confirmed.	
3.14) How are workers and pesticide handlers protected from exposure to pesticides?	***Workers and handlers:*** ***-Follow specific label requirements.*** ***-Are provided decontamination supplies.*** ***-Are trained or certified applicators.*** ***-Are informed of pesticide applications.*** ***-Are provided personal protective equipment.*** ***-Are provided emergency assistance, if needed.***	**Worker Protection Standard requirements are partially met.** [20]	**Worker Protection Standard requirements are ignored.**[20]	Complete list of worker protection standards can be found at: **www.epa.gov/pesticides/health/worker.htm.**	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.15) If pesticides are mixed and loaded in the field, how are they handled?	A mixing and loading pad is used. Mixing and loading is done more than 150 feet from any well and more than 50 feet from surface waters.	Mixing and loading is done in different locations in the field, more than 150 feet from a private well, more than 800 feet from a public well* and more than 50 feet from surface waters. A mixing and loading pad is not used.	Pesticides are mixed and loaded at the same spot in the field year after year without a mixing and loading pad.	Proper pesticide mixing and loading demonstrated.	
3.16) How are empty pesticide containers rinsed and disposed?	***Containers are triple-rinsed or power rinsed, punctured*** and returned to dealer, properly recycled, or disposed of in a licensed landfill. Bags are returned to dealer or taken to licensed landfill. Properly rinsed containers can be disposed in a dumpster that is taken to a licensed landfill.	**Disposal of empty containers and bags on the farm property.**[8,18]	**Disposal of partially filled containers. Burning of containers on the farm property.**[8,18]	Evidence of containers being recycled or properly disposed.	
3.17) Do pesticide applicators read and follow the label instructions?	***Everyone using pesticides follows label and labeling instructions.***		**Label and labeling instructions are not always followed.**[18]	Evidence that labels are followed for environmental concerns.	
3.18) Is a spill kit immediately available to pesticide applicators in the field?	***A spill kit*** containing a shovel, absorbent material, Personal Protective Equipment (PPE) and a container ***is immediately available.***		**No spill kit is available**[6] or no plan is in place to contain spills.	Adequate spill kit present.	

* See groundwater technician for additional information on criteria for reduced isolation distances.

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.19) How is excess spray mixture or rinse water from the interior of the spray system disposed?	***Spray mixture is applied to labeled site at or below labeled rate of application*** or appropriately stored for later use.		**Spray mixture dumped at farmstead or in nearby field or pond.**[4]	Satisfactory explanation of procedures for excess spray mixtures.	
3.20) Where is the exterior of the spray equipment and tractor washed if there is accumulated residue?	Washed in containment or washed in the field in different locations >200' from surface water, catch basins or tile inlets and >150' from a well.		Washed in the same location without collection, or in the field <200' from surface water, catch basins, or tile inlets or <150' from a well.	Satisfactory explanation of procedures for washing spray equipment.	
3.21) How is accumulated spray building wastewater or other comingled rinsates that cannot be directly applied to growing crops disposed?	Applied to a site where there is growing vegetation or where a crop will be planted following labeled setbacks at or below labeled rates. Application areas are rotated and records of contents of material and application site are kept. Or taken to a hazardous waste landfill.		**Dumped at the farmstead, in the field, or a direct discharge to surface water.** [4]		
3.22) How is the proper and safe operation of pesticide application equipment ensured?	***Equipment is correctly calibrated at least annually and leaks are minimized to apply intended rate and distribution pattern.***		**Pesticide application equipment is not properly calibrated.**[6]	Date equipment calibrated annually.	
3.23) How are pesticide applications assured to remain on-target and minimize off-target pesticide spray drift?	***A written drift management plan is utilized that minimizes off-target drift.***	Pesticide applications follow labeled instructions for target pests, but no drift management plan is utilized.	**Spraying operations are completed regardless of weather conditions or forecast, and regardless of the potential of off-target drift.**[7]	Written draft management plan on file.	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.24) What pesticide application records are kept?	***Accurate records are maintained of all agricultural crop applications of pesticides for at least three years.***	Partial pesticide records are kept. Complete pesticide application records will be kept in the future, for review at the time of reverification.	No records are kept. Chemicals used are known by memory or invoices only.	Pesticide records for the past three years on file (or plans for records). -Date of application -Time of application -Pesticide brand/product name -Pesticide formulation -EPA registration number -Active ingredient(s) -Restricted-entry interval (REI) -Rate per acre or unit -Crop, commodity, stored product, or site that received the application -Total amount of pesticide applied -Size of area treated -Applicator's name -Applicator's certification number -Location of the application -Method of application -Target pest -Carrier volume per acre	

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PEST MANAGEMENT PRACTICES (CONTINUED)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
PESTICIDE APPLICATION (CONTINUED)					
3.25) How are beneficial insect populations encouraged?	Field borders and boundaries are managed to encourage beneficial insects.	Beneficial insect management is not considered.			
3.26) Are pesticides selected and applications timed to minimize impact on beneficial insects (natural enemies and pollinators)?	Pesticide toxicity to beneficial insects is considered. Pesticide applications timed to avoid injury to beneficial insect populations.		Broad spectrum pesticides used on a calendar schedule and not timed to avoid beneficial insects.		
3.27) What management practices are used to prevent the development of pesticide resistance (including glyphosate-resistant weeds)?	Pesticides with different modes of action are rotated within a season or from one season to the next or used in tank mixes, where permitted. Pesticides at highest risk of resistance are not used when alternatives are available. Refuge requirements for transgenic seed are followed.	Some but not all pesticide modes of action are rotated or tank mixed. Pesticides at highest risk or resistance are used sparingly.	Pest resistance is not considered when selecting pesticides. Refuge requirements for transgenic seed are ignored.		
3.28) How are agricultural pollution emergencies handled?	Call 911, sheriff, fire or emergency services department for personal safety issues. ***All uncontained spills or releases should be reported to the MDARD Agriculture Pollution Emergency Hotline: 1-800-405-0101***, or the MDEQ Pollution Emergency Alerting System: 1-800-292-4706.		**No contact to state or local authorities. Spill discharges directly to surface water.**[4]	Farm emergency plan on file, or local emergency telephone numbers immediately available.	

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WATER USE REPORTING

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
4.01) If the groundwater and surface water pumps have a combined capacity to pump more than 100,000 gallons per day (70 gallons per minute) for agricultural purposes, has water use been registered and reported to the State of Michigan?	Pump capacity is less than 100,000 gallons per day (70 gallons per minute). Or, Register and report annual water use to Michigan Department of Agriculture and Rural Development by April 1.		**Pump capacity is greater than 100,000 gallons per day (70 gallons per minute) and water use is not reported to the State of Michigan.**[13]	Farm records indicate compliance.	
4.02) Is there an unused well located in the cropping area?	No unused well or abandoned well properly sealed.	Unused well temporarily abandoned properly: -Meets minimum isolation distances -Is disconnected from any water distribution piping -Has the top of the casing securely capped.	**Unused, unsealed well in cropping area.**[1]	Unused well(s) properly sealed.	
4.03) Have new or increased large quantity water withdrawals been registered (pumping capacity greater than 70 gallons per minute (gpm), or 100,000 gallons per day for systems established after July 9, 2009)?	The Water Withdrawal Assessment Tool (WWAT) was used to determine if a proposed withdrawal or expansion is likely to cause an Adverse Resource Impact, and to register the water withdrawal with MDEQ, prior to beginning the withdrawal. The WWAT and registration site is http://www.miwwat.org/		**No, a new water withdrawal exceeding 70 GPM has been established without the use of the WWAT.**[13]	Producer's verbal indication of compliance with regulation.	

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CROP-SPECIFIC MANAGEMENT PRACTICES

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORD OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
CORN MANAGEMENT PRACTICES					
5.01) Is commercial nitrogen applied in the fall for spring-planted corn?	Nitrogen fertilizer is not applied in the fall.		Nitrogen fertilizer is applied in the fall that may be leached from the soil profile.		
5.02) Are label-required setbacks maintained for herbicides with surface water protection advisory statements?	The label-required setbacks from perennial and intermittent streams and rivers are maintained.		**The required setbacks are not maintained on all fields.**[18]	Field maps (2.01) indicating areas requiring setbacks.	
5.03) Is corn rotated with other crops for rootworm control?	Corn is rotated annually without the use of rootworm insecticides.	Corn is rotated annually without overuse of rootworm insecticides.	Continuous corn is grown with the use of a rootworm insecticide.		
SOYBEAN AND ALFALFA MANAGEMENT PRACTICES					
5.04) Is commercial nitrogen applied when planting soybeans, or alfalfa?	No nitrogen is applied because soybeans and alfalfa use nitrogen fixed from the air by soil bacteria.	Nitrogen fertilizer is applied to soybeans or alfalfa.			

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Crop-Specific Management Practices

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Record or Evidence for MAEAP Verification	Your Risk
Wheat Management Practices					
5.05) Are more than 25 pounds of nitrogen per acre applied when planting fall-seeded wheat?	No more than 25 pounds of N fertilizer are applied in the fall.	More than 25 pounds of N fertilizer are applied in the fall.			
Potato Management Practices					
5.06) Is a cover crop planted after potato harvest?	Cover crop is established to take up any residual nitrogen and to protect against wind erosion.	No cover crop is established.			
Sugar Beet Management Practices					
5.07) Is commercial nitrogen applied in the fall for spring-planted sugar beets?	No nitrogen fertilizer is applied in the fall.		Nitrogen fertilizer is applied in the fall that may be leached from the soil profile.		
Vegetable Crop Management Practices					
5.08) How are manure applications managed to prevent any food safety risk?	Manure application record document manure is incorporated and applied 270 or more days prior to harvest.	Manure application records document manure is incorporated and applied 120 or more days prior to harvest.	Manure is applied less than 120 days prior to harvest.	Note: USDA Good Agricultural Practices ≥120 days before harvest. The Food Safety Modernization Act currently recommends using the National Organic Program guidelines for raw manure pre-harvest application interval.	
5.09) Does the farm business have a food safety plan that is followed to reduce the risk of foodborne illness?	A written food safety plan exists and is being implemented.	Food safety practices are generally followed, but not documented in a written plan.	A food safety plan is not available.	Note: This is a GAP (Good Agricultural Practices) requirement. USDA will not certify the farm without a documented food safety plan.	

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CROP-SPECIFIC MANAGEMENT PRACTICES					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK - 1 (SIGNIFICANT HAZARD)**	**RECORD OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
VEGETABLE CROP MANAGEMENT PRACTICES (CONTINUED)					
5.10) Does the farm business have a person designated to implement and oversee a food safety program?	The designated food safety person is documented in the food safety manual.		There is no designated food safety person.	Note: This is a GAP requirement. USDA will not certify the farm without a documented food safety designee.	
5.11) If a soil fumigant pesticide is used on the farm, is a fumigation management plan (FMP) utilized?	A written, site-specific fumigation management plan that meets US-EPA requirements is prepared and utilized before fumigation begins.		**A FMP is not prepared.**[18]		
5.12) Are areas of the farm set aside as habitat for pollinators?	At least two acres are devoted to conservation of native bees and other pollinators by providing flowers through the season, and this is planted with a specific mix of wildflowers for this purpose.	Some areas of the farm are set aside to provide flowers for bees and other pollinators.	No habitat is provided for pollinators.	Note: Cost share is available through enrollment in the USDA pollinator conservation programs (e.g. USDA's FSA CRP-Save pollinator program).	
PASTURE MANAGEMENT PRACTICES (IF YOU DO NOT HAVE PASTURE, SKIP THIS SECTION.)					
6.01) Are there current soil tests on the pastures?	***All fields are sampled and tested on a regular basis,*** at 1 to 4 years, depending on crops being grown and the cropping system.	Most fields are sampled and tested every 1 to 4 years. Producer plans to bring all field soil tests up to date within the next three years. (See also 1.01)	Fields have not been tested within the past four years.	Field names or map. Acres in the cropped portions of the field. Up-to-date soil test reports, or schedule to bring all tests up to date.	

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PASTURE MANAGEMENT PRACTICES (IF YOU DO NOT HAVE PASTURE, SKIP THIS SECTION.)					
RISK QUESTION	**LOW RISK – 3 (RECOMMENDED)**	**MEDIUM RISK – 2 (POTENTIAL HAZARD)**	**HIGH RISK - 1 (SIGNIFICANT HAZARD)**	**RECORD OR EVIDENCE FOR MAEAP VERIFICATION**	**YOUR RISK**
6.02) Is the area managed as a pasture?	Pasture plants are the only significant feed source. Area is covered with pasture plant species. Manure nutrients are removed by growing vegetation and animal grazing.	Pasture plants are the major feed source. Area is covered with predominantly pasture plant species. Manure nutrients are removed by animal grazing and some scrape and haul from areas where pasture plants do not exist.	Significant sources of additional feed are brought to the area. Area is not covered with predominantly pasture plant species. Manure nutrients are not removed by animal grazing or some scrape and haul from areas where pasture plants do not exist. (These areas are not considered pasture and should be managed as dirt lots. See Farm*A*Syst Livestock Lot Management.)		
6.03) How is the pasture managed to protect surface water?	***Livestock are excluded from actual contact with streams or watercourses except for controlled crossings and accesses.*** Flash grazing may be implemented to control vegetation between fenced–in areas.	Herd density in the pasture is such that the stream bank remains vegetated with no eroded areas. Animals are not allowed to congregate under trees close to the waterway causing bare areas. And/or the practice of flash grazing is being implemented to control vegetation between fenced-in areas.	Runoff results in **direct discharge to surface waters.**[4] Livestock have free access to streams or watercourses, causing erosion.	Pasture managed to protect surface water from erosion and contamination demonstrated.	
6.04) What is the condition of pasture vegetation?	Pasture is well managed with all areas vegetated. ***Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface and groundwater.*** Or no contaminated runoff is noted.	Pasture is well managed and vegetated except in feeding and watering areas, which are scraped. ***Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface and groundwater.*** Or, no contaminated runoff is noted.	Pasture is over-grazed with bare spots. Erosion may be present **Runoff from pastures is carrying sediment and nutrients to surface waters**[4] or neighboring property.	No direct discharge from pasture(s).	

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PASTURE MANAGEMENT PRACTICES (IF YOU DO NOT HAVE PASTURE, SKIP THIS SECTION.)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
6.05) What is being done to reduce manure concentration around watering tanks/feeders in pasture areas?	Water tank/feeding areas are rotated to different areas of pasture. Or, watering/ feeding areas are permanent, but manure is removed frequently to prevent concentration of nutrients. ***Runoff from pasture feeding and watering areas should travel through a vegetated filter area to protect surface and groundwater.***	Watering and/or feeding areas are permanent, but manure is removed at least annually to prevent concentration of nutrients. ***Runoff from pasture feeding and watering areas should travel through a vegetated filter area to protect surface and groundwater.***	Watering/feeding areas are permanent with infrequent or no manure removal. There is evidence of **direct discharge to surface water**[4] or ponding in low areas.	Proper manure management around water and feed demonstrated.	

IRRIGATION MANAGEMENT PRACTICES (IF YOU DO NOT USE IRRIGATION, SKIP THIS SECTION.)

SYSTEM MANAGEMENT					
7.01) Have all irrigation systems been evaluated for application uniformity?	***All irrigation systems have been evaluated for uniformity.*** Corrections are made to the system to improve uniformity.	Some irrigation systems have been evaluated for uniformity. Remainder of systems scheduled to be evaluated.	Irrigation system uniformity has not been evaluated.	Uniformity tests on file. Schedule for evaluating systems that have not been evaluated.	
7.02) How is the amount of irrigation water delivered accurately determined?	***All water applications are accurately determined:*** -by knowing actual flow delivered (GPM) and time of application. -or, by using a flow meter. -or, by average output caught with system evaluation.	Water applications are estimated or based on rates given by irrigation vendor or installation company.	Water application amounts not determined. Excess application occurs.	Irrigation water delivered by irrigation is accurately determined.	

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IRRIGATION MANAGEMENT PRACTICES (IF YOU DO NOT HAVE IRRIGATION, SKIP THIS SECTION.)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
SYSTEM MANAGEMENT (CONTINUED)					
7.03) Are all sprinkler systems operated to minimize drift and off-target application?	***All sprinkler systems are operated to minimize drift and off-target application.*** No off-target irrigation application present.	Most sprinkler systems operated to minimize drift and off-target application. Few off-target irrigation applications occur.	Sprinkler systems are often operated under windy conditions. Water is sprayed over roads, adjacent property or structures.	No field evidence of off-target applications.	
7.04) Is noise control provided when needed?	***Noise control is provided*** when needed.	In most areas of concern, noise control is provided when needed.	Noise control is not provided when needed.		
RECORD KEEPING					
7.05) Are proper irrigation system management records collected and retained for use in decision-making and for reference in case of complaints?	Irrigation system management records are collected and retained, including: ***- Crop type and location.*** ***- Source of the water used.*** ***- Date,*** method ***and amount of each irrigation water application.*** ***- All system inspections and repairs that influence uniformity and leaks.*** ***- Calibration of fertigation and chemigation equipment, if used.*** ***- Records on system uniformity evaluation.***	Most of irrigation system management records are collected and retained. Plan to maintain complete irrigation records.	Few or no irrigation system management records are collected or retained.	Irrigation records on file, or plans to maintain records.	

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IRRIGATION MANAGEMENT PRACTICES (IF YOU DO NOT HAVE IRRIGATION, SKIP THIS SECTION.)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
IRRIGATION SCHEDULING					
7.06) How is irrigation scheduling used to determine when it is necessary to irrigate and how much water should be applied during each irrigation event?	Irrigation water is scheduled on the basis of: ***- Available soil water for each unit scheduled.*** ***- Depth of rooting for each crop irrigated.*** ***- Allowable soil moisture depletion at each stage of crop growth.*** ***- Measured, estimated or published evapotrans-piration data to determine crop water use.*** ***- Measured rainfall in each field irrigated.***	Irrigation water is scheduled on the basis of observed soil moisture content and/or daily water crop usage.	Irrigation water is applied at a set rate per week if no precipitation is received, or amounts of water applied through irrigation are not adjusted for crop stages	Scheduling system evident by records.	
APPLICATION PRACTICES TO AVOID RUNOFF AND LEACHING					
7.07) Is there a rain gauge in every irrigated field?	***Every field being managed for irrigation has a rain gauge in the field.*** Rain events are observed and used in conjunction with irrigation scheduling.	Most fields have a rain gauge; plan to have gauge in all fields.	No rain gauges or only one rain gauge at the farmstead.	Rain gauges in all irrigated fields, or plan to maintain in all fields.	
7.08) Is irrigation water runoff and ponding minimized?	***Sprinkler application rates are below the soil infiltration rate.*** Nutrient leaching is minimized.	Most sprinkler application rates are below the soil infiltration rate. Some runoff and ponding is present.	Sprinkler application rates exceed the soil infiltration rate. Runoff and ponding is commonly visible.	No indication of significant runoff or ponding in irrigated fields.	

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IRRIGATION MANAGEMENT PRACTICES (IF YOU DO NOT HAVE IRRIGATION, SKIP THIS SECTION.)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
APPLICATION PRACTICES TO AVOID RUNOFF AND LEACHING (CONTINUED)					
7.09) Are split applications of nitrogen fertilizer (fertigation and land applied) used when nitrogen is used in an irrigated field?	After planting, ***split applications are used to ensure that N is available when plants need it most and to minimize the amount that can be leached.*** N application does not exceed MSU recommendations.		Majority of nitrogen is applied before or at planting, increasing risk of N leaching.		
7.10) Do moving irrigation systems that use chemigation have adequate interlock and safety systems to prevent over application of pesticides, fertilizer, and water?	***An adequate interlock and safety system prevents over application of pesticides, fertilizer, and water when pumps continue to run and the distribution system stops moving.***		No.	Chemigation interlock system present.	
7.11) How far is the fertilizer/pesticide chemigation storage or fertigation/ chemigation system located from surface water (ponds, streams, rivers, drains, etc.)?	***200 feet or greater.***	Less than 200 feet with appropriate security measures.	Less than 200 feet.	Appropriate chemigation storage or fertigation/chemigation system isolation from surface water.	
7.12) Is excess irrigation avoided?	***Irrigation water applications in excess of the quantity of water needed to replace the soil/substrate moisture deficit are avoided.***	Excess irrigation water applications may occur occasionally.	Excess irrigation water applications are common.		

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IRRIGATION MANAGEMENT PRACTICES (IF YOU DO NOT HAVE IRRIGATION, SKIP THIS SECTION.)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
WELLHEAD PROTECTION					
7.13) Is the irrigation well adequately protected from contamination from pesticides and fertilizers when fertigation or chemigation is used?	***Anti-backflow device installed,*** including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and agricultural chemical/fertilizer storage and preparation areas are at least 150 feet from the well or at least 50 feet from the well with secondary containment. Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	***Anti-backflow device is installed,*** including a reduced pressure zone (RPZ) valve double check valve assembly, or chemigation valve with an internal air gap, and agricultural chemical/fertilizer storage and preparation areas have secondary containment, but **storage and preparation areas are less than 50 feet from the well.**[1] Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**No anti-backflow device,** no secondary containment and **less than 150 feet isolation distance from irrigation well.**[1]	Adequate protection of the well provided.	
7.14) If the irrigation well is inter-connected with a surface water source, is the well protected from backflow (back pressure and back siphonage) from the surface water into the well?	***Anti-backflow device installed,*** including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, that protects the well from back pressure and back siphonage into the well. Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	***Anti-backflow device installed,*** including a reduced pressure zone (RPZ) valve double check valve assembly, or chemigation valve with an internal air gap, to protect some irrigation water sources. Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**No anti-backflow device installed.**[1]	Anti-backflow device installed, including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap.	
7.15) If manure or wastewater is applied through the irrigation system, are appropriate backflow prevention devices in place and properly maintained for all irrigation water sources?	***Anti-backflow device installed,*** including a reduced pressure zone (RPZ) valve double check valve assembly, or chemigation valve with an internal air gap, to protect all irrigation water sources. Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	***Anti-backflow device installed,*** including a reduced pressure zone (RPZ) valve double check valve assembly, or chemigation valve with an internal air gap, to protect some irrigation water sources. Air gap is twice the diameter of the fill pipe or 6 inches, whichever is greater.	**No anti-backflow device is installed.**[1,4]	Anti-backflow device installed, including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, protects both groundwater and surface water sources.	

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IRRIGATION MANAGEMENT PRACTICES (IF YOU DO NOT HAVE IRRIGATION, SKIP THIS SECTION.)

RISK QUESTION	LOW RISK – 3 (RECOMMENDED)	MEDIUM RISK – 2 (POTENTIAL HAZARD)	HIGH RISK - 1 (SIGNIFICANT HAZARD)	RECORDS OR EVIDENCE FOR MAEAP VERIFICATION	YOUR RISK
WELLHEAD PROTECTION (CONTINUED)					
7.16) Is a Horizontal Sock Well (HSW) present in the cropping system?	-HSW outlets are clearly identified as not being suitable for human consumption. -HSW is completely separated (no common piping) from any potable water supply system. -HSW meets isolation distance requirements the entire horizontal length of the HSW -Both ends of the HSW are identified.	-HSW outlets are clearly identified as not being suitable for human consumption. -HSW is completely separated (no common piping) from any potable water supply system. -HSW meets isolation distance requirements the entire horizontal length of the HSW, except for chemigation/fertigation systems during active use season that have an ***anti-backflow prevention device installed,*** including a reduced pressure zone (RPZ) valve, double check valve assembly, or chemigation valve with an internal air gap, and secondary containment. -Both ends of the HSW are identified.	**HSW is being used for human consumption, shares common piping with a potable water supply, does not have both ends clearly identified** **OR** **Does not meet State of Michigan isolation distances** or MAEAP Standard **for its entire horizontal length.** [1,3]	Low or medium risk criteria are present or demonstrated.	
7.17) How far is the irrigation fuel tank from a storm drain, surface water or designated wetland?	Tank is more than 50 feet away or has some other engineering control present that would control or divert a spill from reaching a storm drain, surface water or designated wetland.		**Tank is 50 feet or less away from surface water** [16] and without an engineering control in place**.**	Appropriate fuel storage isolation distance from surface water. Engineering control, such as double-walled tank or dike.	

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Other Environmental Risks in the Cropping System

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Other Environmental Risks in the Cropping System					
8.01) Is a live, restricted, or prohibited species on the land or in the waters owned by producer?	Such species is not known to be present.	Such species is present, but was not knowingly introduced, It was introduced under a permit, OR It is possessed under a permit.	**Such species is present because it was knowingly introduced without a permit, OR It is possessed without a permit.**[14]		
8.02) Are there other activities, products, processes/ equipment services, byproducts and/or wastes in the cropping areas that pose contamination risks to groundwater or surface water?	No risk(s) identified.	Risk(s) identified and plan to mitigate the contamination risk(s).	No plan to mitigate contamination risk(s).	No other environmental risks found at farmstead.	

Cropping System Improvement Action Plan

Develop the Cropping System Improvement Action Plan for risks beginning on the inside cover of this bulletin. Once the plan has been implemented, call 517-284-5609 for a MAEAP Cropping System verification visit.

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Table 1. Federal, state and local environmental requirements for operation of this farm business.

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline-1-800-662-9278, MDARD information-1-800-292-3939.

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Private pesticide applicator certification	Any persons using or supervising the use of restricted-use pesticides (RUP) in the production of an agricultural commodity on their own or their employer's land must be a certified pesticide applicator.	3 years	MDARD/Pesticide and Plant Pest Management Division	
Pesticide safety training for pesticide workers	The federal Worker Protection Standard for agricultural pesticides requires employers of pesticide handlers and workers to train employees on pesticide safety. Agricultural employers must be able to verify compliance.	Each employee must be trained every 5 years	MDARD/PPPM	
NPDES permit CAFO	National Pollutant Discharge Elimination System permit for large concentrated animal feeding operations (CAFOs).	5 years or as noted on permit	MDEQ/Water Bureau	
Farm motor vehicle fuel storage tanks greater than 1,100 gallon capacity (above- and below-ground tanks)	Fuel storage tanks have to be certified (aboveground) or registered (underground); a site plan has to have been submitted to the LARA before the installation is placed into service. Smaller tanks have other requirements to be met.	Annual	Department of Licensing and Regulatory Affairs (LARA)	
Air use permit	Permit to install and operate equipment or processes which may emit air contaminants (incinerators for burning animal carcasses or manure, and biodigesters and associated equipment are examples).	Before construction	MDEQ/Air Quality Division	N.A.
Groundwater discharge permit	Any discharge of waste or waste effluent into or onto the ground (e.g., egg wash water and milk cooling water [over 10,000 gallons/day] that is discharged), and any livestock facility over 5,000 animal units.	5 years	MDEQ/Water Resources Division	
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulations, ordinances and codes.	Before construction	Local health department	N.A.
Septic permit (house and farm operation)	The first step in the process of determining if a piece of land that does not have municipal wastewater services available can be considered for an on-site septic system.	Before construction	Local health department	N.A.
Land and water interface construction permits	Construction activities (dredging, filling, draining, construction, structure placement) in, across, and under water.	Before construction	MDEQ/Water Resources Division	N.A.
Soil erosion and sedimentation control permit	Earth change activities within 500 feet of a lake or a stream, or that will disturb an area greater than 1 acre in size.	Before construction	County soil erosion permitting agency	
Water use reporting	Agricultural water users with the capacity to withdraw surface or groundwater that exceeds 100,000 gallons per day (70 gallons per minute) are required to report actual water withdrawals annually.	Annual	MDARD	
Identification guides for some species regulated by Part 413.	http://mnfi.anr.msu.edu/invasive-species/aquaticsfieldguide.pdf https://mnfi.anr.msu.edu/invasive-species/InvasivePlantsFieldGuide.pdf			

Table 1. Federal, state and local environmental requirements for operation of this farm business (continued).

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Water Withdrawal Assessment – new or increased large quantity	The Water Withdrawal Assessment Tool (WWAT) is designed to estimate the likely impact of a water withdrawal on nearby streams and rivers. Use of the WWAT is required of anyone proposing to make a new or increased large quantity withdrawal (over 70 gallons per minute) from the waters of the state, including all groundwater and surface water sources, prior to beginning the withdrawal. The WWAT and registration site is: **www.deq.state.mi.us/wwat**.	Before Water Withdrawal	MDEQ Water Resources Division	The registration is valid for 18 months
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulations and ordinances and codes.	Before construction	Local health department	
Other Environmental Guidelines	**Description**		**Administering Agency**	**Your Expiration Date**
Manure management and utilization	The Michigan Right to Farm Act (Act 93 of 1981) requires the establishment of generally accepted agricultural and management practices (GAAMPs). Agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance litigation. The GAAMPs are reviewed annually. The latest GAAMPs can be accessed at: **www.michigan.gov/mdard**.		MDARD	
Pesticide utilization and pest control				
Nutrient utilization				
Site selection and odor control for new and expanding livestock production facilities				
Irrigation water use				
Farm market				
MAEAP verification: Livestock, Farmstead, Cropping and the Forest, Wetlands and Habitat Systems.	MAEAP systems verification is valid (P.A. 1 & 2, 2011) for five years. MAEAP verification in good standing is dependent on following the practice specific to each system, being in conformance with the applicable GAAMPs, an annual plan review and update (livestock system) and updates as necessary as conditions change on the farm.		MDARD	

Table 2. Legal citations for environmental risks in Crop◆A◆Syst.

Footnote	Michigan Law	Description
1	Public Health Code, Public Act 368 of 1978	Part 127: Water Supply and Sewer Systems
2		Part 138: Medical Waste Regulatory Act
3	Safe Drinking Water Act, Public Act 399 of 1976	
4	Natural Resources and Environmental Protection Act 451 of 1994	Part 31: Water Resources Protection
5		Part 55: Air Pollution Control
6		Part 83: Pesticide Control
7		Part 111: Hazardous Waste Management
8		Part 115: Solid Waste Management
9		Part 117: Septic Waste Servicers
10		Part 121: Liquid Industrial Waste
11		Part 169: Scrap Tires
12		Part 201: Environmental Response
13		Part 327: Great Lakes Preservation
14		Part 413: Wildlife Conservation
15	Bodies of Dead Animals Act, Public Act 239 of 1982 as amended	
16	Fire Prevention Code Public Act 207 of 1941	Storage and Handling of Flammable and Combustible Liquids
17	Grade A Milk Law, Public Act 266 of 2001	
	Federal Law	
18	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	
19	Title III of the Superfund Amendments and Reauthorization Act of 1986, also know as the Emergency Planning and Community Right-to-Know Act	
20	Worker Protection Standard for Agricultural Pesticides	
21	Clean Water Act	
22	Food Safety Modernization Act (FSMA) Food Safety Rule	

Crop Commodities					
Crop Name	**Acres**	**Crop Name**	**Acres**	**Crop Name**	**Acres**
Alfalfa		Cucumbers, Fresh		Oats	
Apples		Cucumbers, Pickling		Peaches	
Apricots		Dry Beans		Pears	
Asparagus		Fruit, Other		Potatoes	
Blueberries		Grapes, Juice		Rye	
Carrots		Grapes, Wine		Small Grain, Other	
Cherries, Sweet		Green Beans		Soybeans	
Cherries, Tart		Greenhouse, Annual		Squash/Pumpkin	
Christmas Trees		Greenhouse, Perennial		Sugar Beets	
Clover, Seed		Greens, Herbs		Sunflower	
Corn, Grain		Hay/Pasture		Vegetable, Other	
Corn, Seed		Hops		Wheat	
Corn, Silage		Mixed Garden		Other:	
Corn, Sweet		Nursery		Other:	
Note: Express acres to the closest quarter acre.					

	Cropping Acres	Farmstead Acres	Livestock Acres	Greenhouse Sq. Feet
Total Acres Included in CNMP or NMP				
Total Acres Receiving Manure in CNMP or NMP				
Total Acres (or Square Feet) Receiving Fertilizer				
Total Acres (or Square Feet) Receiving Pesticides				
Total Acres (or Square Feet) Irrigated				
Approximate Acres of Buffer/Filter Strips				
Total Acres (or Square Feet) of Cover Crop (Annual)				
Total Acres (or Square Feet) of No-Till/Zone Till/Grass cover				
Total Acres (or Square Feet) of Conservation Tillage				
Total Number of Gullies Stabilized (Grade/Stabilization Waterways)				
Total Square Feet in Production Area (Greenhouse Only)	N/A	N/A	N/A	
Milkhouse Waste Discharge Eliminated (gallons)				N/A
Livestock Exclusion (feet)				N/A
Silage/Feed Leachate Runoff Acres (size of pad)				N/A
Total Volume of Manure Produced (gallons)				N/A
Total Volume of Manure Being Applied (gallons)				N/A
Total Volume of Manure Sold (gallons)				N/A
Total Volume of Given Away (gallons)				N/A
Pounds of N Available in Manure				N/A
Pounds of P Available in Manure				N/A
Pounds of K Available in Manure				N/A

Farmstead / Greenhouse	In Pounds	In Gallons
Total Amount of Fuel Stored		
Fertilizer Storage Capacity (Max stored on-hand at one time)		
Pesticide Storage Capacity (Max stored on-hand at one time)		
Number of Wells Meeting the Distance Regulations on Farmstead		

Farmstead Only	
Are Extremely Hazardous Substances (EHS) stored on the farm at the threshold limit?	☐ Yes ☐ No

Animal Unit (AU) Conversion Factors by Animal Type and Class			
Animal Type	**Class**	**Average Animal Weight**	**Quantity**
1,000 Beef cattle or cow/calf pairs = Large CAFO	CALF	450	
	HIGH FORAGE	750	
	HIGH ENERGY	750	
	HIGH FORAGE	1100	
	HIGH ENERGY	1100	
	COW	1000	
700 Mature dairy cattle (whether milked or dry cows), or 1,000 Veal calves = Large CAFO	CALF	150	
	CALF	250	
	HEIFER	750	
	HEIFER	1000	
	LACTATING COW	1400	
	DRY COW	1400	
	VEAL	250	
30,000 Laying hens or broilers liquid, or 125,000 Chickens dry (other than laying hens), or 82,000 Laying hens dry = Large CAFO	DRY SYSTEM		
	LIQUID SYSTEM		
	PULLETS		
55,000 turkeys = Large CAFO	ALL		
500 horses = Large CAFO	ALL	1000	
2,500 swine each weighing over 55 pounds, or 10,000 swine weighing less than 55 pounds = Large CAFO	NURSERY PIG	25	
	GROW-FINISH	150	
	GESTATING	275	
	LACTATING	375	
	BOAR	350	
	OTHER		
10,000 sheep or lambs	ALL	100	

OTHER LIVESTOCK TYPE:	OTHER LIVESTOCK QUANTITY:
OTHER LIVESTOCK TYPE:	OTHER LIVESTOCK QUANTITY:

MICHIGAN STATE UNIVERSITY | Extension

Major revision (destroy old). 10:18 – 1,800 – HJ/BP

LIVESTOCK·A·SYST

FOR MICHIGAN PRODUCERS

FAS 112 · October 2018

For MAEAP Verification:
Contact the MAEAP Office at the Michigan Department of Agriculture & Rural Development

(517) 284-5609

MAEAP

MICHIGAN STATE UNIVERSITY | Extension

Livestock◆A◆Syst

Livestock System Improvement Action Plan

Risk question	List high-risk practice(s) from Livestock◆A◆Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed
6.02	Example: Most roof water and upslope watershed drainage runs through livestock lot. No clean water system in place.	Yes	Divert clean roof runoff away from livestock lot. Repair barn gutters and downspouts, discharge roof water in vegetated area west of barn. Install curb/berm on east side of lot to divert runoff.	July, 2018	**(√)** Completed Aug. 28, 2018

(continued on next page)

I understand that this livestock system assessment (Livestock◆A◆Syst) and corresponding Livestock System Improvement Action Plan were developed on the basis that I have disclosed, to the best of my knowledge, all information pertaining to my livestock operations.

Farm address:

Street_____

City_____

State_____Zip_____

Watershed name: _____

Producer's Signature _____

Date _____

Livestock◆A◆Syst conducted by:

Name _____

Title _____

Organization_____Date_____

Livestock ◆A◆Syst

Livestock System Improvement Action Plan (continued)

Risk question	List high-risk practice(s) from Livestock◆A◆Syst and medium-risk practices that do not meet MAEAP requirements	Required for MAEAP verification	Alternative low-risk practice (include potential sources of technical and financial assistance)	Action plan	
				Planned completion date	Indicate date when completed

MAEAP Verification Action Plan	Date
Target date for MAEAP verification of **Cropping System**	
Target date for MAEAP verification of **Farmstead System**	
Target date for MAEAP verification of **Livestock System**	
Target date for MAEAP verification of **Forest, Wetlands and Habitat System**	

For MAEAP verification, contact MAEAP office at the Michigan Department of Agriculture and Rural Development: 517-284-5609

Livestock ◆ A ◆ Syst

Introduction

In 2011, the Michigan Agriculture Environmental Assurance Program (MAEAP) was codified in law as set forth in P.A. 451, Part 82, of the Natural Resources and Environmental Protection Act (NREPA). The Livestock◆A◆Syst tool is updated annually to incorporate the current MAEAP Standards for this system. The tool also includes applicable Generally Accepted Agricultural and Management Practices (GAAMPs) established under Michigan Right to Farm. The completed A Syst tool and associated plan and practices meet the requirement of a Conservation Plan, as defined in Part 82 of NREPA and referenced in Part 87 of NREPA. This statute also ensures producer confidentiality for any information provided in connection with the development, implementation or verification of a conservation plan or associated practices and is exempt from disclosure under the Freedom of Information Act.

MAEAP provides an excellent opportunity for Michigan farmers to manage their farms proactively and voluntarily to protect and enhance soil and water resources. For livestock producers, the ultimate accomplishment in MAEAP is Livestock System verification. Some producers may elect to pursue immediately the completion of a Comprehensive Nutrient Management Plan (CNMP) and MAEAP Livestock System Verification. However, many producers find that smaller, progressive steps in environmental improvement are more economical and practical.

What is Livestock◆A◆Syst?

The MAEAP Livestock◆A◆Syst is designed to meet the needs of those producers who choose to use a risk management-based assessment to work their way to MAEAP verification via a progressive approach.

The Livestock◆A◆Syst is a series of risk questions and answers about livestock management practices reflecting components of a CNMP. Producers can work one-on-one with a non-regulatory MAEAP partner to identify potential environmental risks and to develop a confidential Livestock Improvement Action Plan to reduce those risks. The action plan is the producer's plan and can be completed at his or her own pace. There is no deadline. Producers determine how far and how fast to go.

Producers have several options for using Livestock◆A◆Syst:

1. Complete the risk questions to identify practices that present a high risk of contaminating water resources. At this point, producers may continue using Livestock◆A◆Syst to develop an implementation plan, or they may determine that they want to obtain the services of a certified CNMP provider to help them through the process of developing a plan to implement the desired changes.
2. Develop a Livestock Improvement Action Plan. Producers may choose to implement the action plan using their own resources, or they may choose to enter into a U.S. Department of Agriculture (USDA) Environmental Quality Incentives Program (EQIP) contract to obtain cost-share assistance. The EQIP contract may include the development of a CNMP.
3. Complete implementation of the Livestock Improvement Action Plan prepares the producer to develop a CNMP, if that is his or her choice. Livestock farm owners may achieve MAEAP Livestock System verification for their farms either through a completed CNMP or by using a completed Livestock◆A◆Syst, Livestock Improvement Action Plan and records indicating conformance with all boxed areas of the Livestock◆A◆Syst. Owners of farms operating in compliance with a Michigan Department of Environmental Quality, National Pollutant Discharge Elimination System (MDEQ NPDES) permit may also request MAEAP verification. These farms must indicate they meet the standards in Section 13 "Mortality Management and Veterinary Waste Disposal" and Section 14 "Odor Management" of the Livestock◆A◆ Syst, including section 14.01, for Siting GAAMPs verification, if applicable. All other standards for MAEAP verification will be met through the MDEQ NPDES permit review and will not be reviewed for MAEAP verification.

   The owner of a MAEAP-verified farm is eligible for a variety of incentives. Completion of a Livestock◆A◆Syst verification allows owners of small and medium-sized farms to enjoy the peace of mind knowing that their inspected practices are consistent with the identified current Right to Farm (RTF) Manure Management and Utilization GAAMPS and RTF siting requirements.

4. Farms that have been verified in the MAEAP Livestock System using a CNMP may complete the Livestock◆A◆Syst for reverification.

How Does Livestock◆A◆Syst Work?

1. The environmental risk questions are grouped into eight sections. Producers select all relevant sections. Not all risk questions will apply to all livestock farms.

   Sections are:
   - Livestock Improvement Action Plan
   - Whole-farm Nutrient Balance
   - Farm Site Review
   - Silage Storage
   - Drinking Water Well Condition
   - Manure Spreading Plan
   - Conservation Practices for Fields Used for Manure Application
   - Emergency Plan and Employee Training
   - Mortality Management and Veterinary Waste Disposal
   - Odor Management
   - Other Environmental Risks in the Livestock System

Risk questions that address management practices that are regulated by the state or federal law indicate **illegal practices with black bold print**. The numbered footnotes indicate what regulation(s) is (are) violated. (See Table 1, on page 40.)

Risk questions that address management practices included in the Manure Management GAAMPs indicate the management level required for consistence with the identified current GAAMPs ***with blue bold italic print***.

Finally, a blue box indicates the management level(s) required for MAEAP verification.

MAEAP management requirements are aligned with state and federal regulations, the Michigan Right to Farm GAAMPs and environmentally based management practices that are supported by research. The records and/or plans that indicate the approved management practices have been implemented on the farm are listed in the column next to the risk question. This evidence will provide the basis for awarding environmental assurance through MAEAP.

2. Producers answer each risk question by selecting the statement that best describes conditions on their farm. The risk question answers indicate whether management practices have a low, medium or high risk of pollution. As noted above, some questions are coded to indicate consistence with GAAMPs or violation of state law.

3. After completing each section, producers list the practices that present a high risk of contaminating water resources in the Livestock Improvement Action Plan. (The plan begins inside the front cover of the bulletin.) Medium risks are also included that do not meet MAEAP requirements.

4. In the Livestock Improvement Action Plan, producer's list alternative practices, structures or equipment that they plan to use to help reduce risks, and sources of technical and financial assistance. A target date is included for accomplishing the changes as well as a target date for MAEAP verification.

5. Participation in an approved MAEAP Phase 1 educational session is also required for the initial MAEAP verification.

After developing and implementing a Livestock Improvement Action Plan to address the risks indicated by the Livestock◆A◆Syst, producers may contact the Michigan Department of Agriculture and Rural Development (MDARD) to request a farm inspection by calling 517-284-5609. An MDARD inspector will schedule a visit at the producer's convenience.

Confidential Assistance

Participating farmers are offered confidential, one-on-one guidance through the risk assessment process. Confidential assistance is offered by members of MAEAP's non-regulatory partner organizations, including local conservation districts, Michigan State University Extension (MSUE) and the Michigan Milk Producers Association. Producers may indicate which organization they would prefer to work with or may contact the MAEAP office at 517-284-5609.

Assistance is available to help producers in a variety of ways, including:

- Guide producers through the Livestock◆A◆Syst assessment process.
- Help producers understand MAEAP and other environmental expectations.
- Identify farm-specific areas of concern and opportunities related to environmental stewardship.
- Set farm-specific areas of concern and opportunities related to environmental stewardship.

- Set farm-specific goals, timelines, and plans for improving and sustaining good environmental stewardship.
- Identify the appropriate resource persons to assist in the completion of specific steps toward environmental improvement.

No Obligation

Completing the Livestock◆A◆Syst does not obligate the farmer to specific changes. Farmers can progress as far as they feel comfortable or to meet individual farm goals. Note that some circumstances (e.g., Concentrated Animal Feeding Operation [CAFO] designations, some Environmental Quality Incentives Program [EQIP] requirements and Michigan Department of Environmental Quality [MDEQ] enforcement actions) require farms to implement a CNMP and/ or other farm practice changes more quickly.

A Few Final Words

The key to Livestock◆A◆Syst is that once producers have identified environmental risks, the plan is implemented to reduce the risk(s). Some of the stewardship practices that will reduce risks may cost very little and take very little time to implement.

Other practices may involve additional cost and may not be implemented for a few years. It is important, however, to have a plan to follow. Producers who have developed a plan and implemented changes to address the risks are ready to consider MAEAP verification of their Livestock System.

Points of Reference

The Michigan Right to Farm Act authorizes the Michigan Commission of Agriculture and Rural Development to develop and adopt GAAMPs for farms and farm operations in Michigan. These voluntary practices are based on available technology and scientific research and promote sound environmental stewardship. The current Right to Farm GAAMPs are posted on the MDARD Web site: **www.michigan.gov/mdard**.

P.A. 451 of 1994, Part 82, ensures the confidentiality of the producer information that farmers provide to the MDARD for system verification. Any information connected with the development, implementation or verification of a conservation plan or conservation practice is confidential.

Tools in the Livestock◆A◆Syst Supplement (FAS112S)

Animal Waste Management (AWM). AWM is a planning/design tool for animal feeding operations that can be used to estimate the production of manure, bedding and process water, and determine the size of storage/ treatment/facilities. The procedures and calculations used in AWM are based on the USDA Natural Resources Conservation Service (NRCS) Agricultural Waste Management Field Handbook.

Bodies of Dead Animals Act (BODA) Recordkeeping Forms. These forms provide the necessary documentation for both composting and burial of mortalities. These forms are found at **www.maeap.org** and in the MSUE bulletin "Recordkeeping System for Crop Production," E-2342.

Manure Management: Getting Started. This nutrient balance worksheet is a tool to determine farm land base sustainability. Found at **www.maeap.org**.

Manure Storage Review Sheets. This evaluation checklist assists in determining proper storage construction and notes if the structure can be verified. Found at **www.maeap.org**.

Odor Management Plan. This plan has been developed to address odors associated with livestock operations. Information on an odor management plan can be found at **www.maeap. org** and **msue.anr.msu.edu/resources/odor_management_plans**.

Proper Disposal of Dead Animal Carcasses Worksheet. This worksheet helps evaluate proper disposal of dead animal bodies and compliance with the BODA. Found at **www.maeap.org**.

Silage Leachate Management. This information provides tips for reducing silage leachate and associated risks. Find in the CNMP Guidance Document, question 7, at **www.maeap.org**.

Table of Contents

Table of Contents

Whole-farm Nutrient Balance					
Risk Question	**Low Risk – 3 (Recommended)**	**Medium Risk – 2 (Potential Hazard)**	**High Risk - 1 (Significant Hazard)**	**Records or Evidence for MAEAP Verification**	**Your Risk**
1.01) Is there adequate land base for all nutrients used on the farm?	There is adequate land base or manure is sold or transferred off site.	Lacks adequate land base but fields test low ***(< 75 PPM)*** in phosphorus and manure applications can be balanced on nitrogen basis.	Lacks adequate land base.	Complete Manure Management: Getting Started (see Supplement) or use NRCS farm nutrient balance spreadsheet.	
1.02) What portion of the animal feed is produced on the farm?	75 percent or more of the protein and phosphorus in the ration originates from on-farm sources.	Between 50 and 75 percent of the protein and phosphorus in the ration originate from on-farm sources and no manure is sold or transferred off site.	Less than 50 percent of the protein and phosphorus in the ration originate from on-farm sources and no manure is sold or transferred off site. This results in the buildup of soil phosphorus and other nutrients.		
Farm Site Review					
2.01) Has there ever been a formal Right to Farm complaint against the farm?	There has never been a Right to Farm complaint, or the concern was not verified, or the concern was resolved.		There was a formal Right to Farm complaint and the concern was not resolved.	Producer's verbal indication of complaint history.	
2.02) Do rain, snow (including plowed snow) roof water or surface water come into contact with manure, compost, feed/silage, livestock lots or travel lanes resulting in contaminated runoff?	There is no clean water contact with the listed areas, or contaminated ***runoff is collected or treated*** and does not discharge directly to surface water.		Areas are exposed to rain/snow or surface water, and runoff is not collected or treated. **Runoff discharges directly to surface water.**[4]	Visual inspection of the farmstead. Visual inspection of flow patterns are most apparent during or shortly after a rainfall event and/or thaw.	
2.03) If surface drains are present around the farmstead, what are they collecting and where does the runoff end up?	Surface drains do not capture contaminated runoff or there are surface drains ***but runoff is collected or treated*** and does not discharge directly to surface water.		Surface drains collect contaminated **runoff and discharge directly to surface water**[4] or run to low areas and pond.	Visual inspection of the farmstead. Visual inspection of flow patterns are most apparent during or shortly after a rainfall event and/or thaw.	

A boxed risk level indicates the level required for environmental assurance verification.

Bold Black print indicates a violation of state or federal regulation.

Bold Blue Italic print indicates a management practice consistent with 2018 Right to Farm (RTF) Generally Accepted Agricultural Management Practices (GAAMPs).

Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
2.04) How far away is the well from the following areas: 1) Temporary manure stacking areas? 2) Livestock lots?	Isolation distance is maximized to the extent possible but is not less than 75 feet for public wells and 50 feet for private wells.	Three to six feet.	**Isolation distance is less than 75 feet for public wells and 50 feet for private wells.**[1,3]	Required for MAEAP Farmstead System verification.	
2.05) Do livestock watering systems have backflow prevention devices to protect the well from contamination?	All watering systems have backflow prevention build into the waterer or in the water lines to the waterers, or an air gap.		**No backflow prevention for livestock watering systems.**[1]	Required for MAEAP Farmstead System verification.	
Milking Center Wastewater					
3.01) How many gallons of water per cow per day are utilized in parlor cleanup?	Fewer than 10 gallons.	Between 10 to 20 gallons.	More than 20 gallons.		
3.02) Where are milking center chemicals, disinfectants and antibiotics stored?	Stored in a partitioned off protected area away from drains.	Stored in a location where a spill could reach the drain.	Stored in high-traffic area near drains.		
3.03) How is plate cooler water handled?	100% of plate cooler water is reused for livestock watering or other livestock-related use or permitted for discharge.	Less than 10,000 gal/day are discharged onto ground surface. Discharged water does not intercept surface water.	**More than 10,000 gal/day are discharged onto ground surface or intercept surface water without a permit.**[4]	Appropriate cooling water management demonstrated.	
3.04) What are the parlor cleanup practices?	Milk, milky rinse water, manure, and feed waste are land applied or otherwise appropriately utilized, and are never discharged to septic or other infiltration type treatment systems.	Some milk, milky rinse water, manure, or feed waste is discharged to septic or other infiltration-type treatment systems. Systems are monitored and managed for proper operation.	Significant milk, milky rinse water, manure, or feed waste is discharged to septic or other infiltration-type treatment systems. Wastewater is **discharged directly to surface water.**[4]	Appropriate milking center cleanup practices demonstrated.	
3.05) Is all wastewater collected and stored?	Wastewater is stored, used, hauled daily or passes through a designed treatment system.	Wastewater passes through a properly functioning filtration system.	**Wastewater is directly discharged to a lake, drainage ditch, stream or field.**[4]	Appropriate wastewater management is demonstrated. No direct discharge.	

A boxed risk level indicates the level required for environmental assurance verification.

Bold Black print indicates a violation of state or federal regulation.

Bold Blue Italic print indicates a management practice consistent with 2018 Right to Farm (RTF) Generally Accepted Agricultural Management Practices (GAAMPs).

Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Milking Center Wastewater (continued)					
3.06) Is rejected milk collected and stored?	Rejected milk is stored, hauled out or fed.		**Milk is discharged to surface water**[4], put into septic system or put into treatment strip.	Rejected milk is properly managed.	
Milking Center Septic Systems (If this method is not used, skip to the next section)					
3.07) Is all milkhouse waste water treated by the septic system?	All milkhouse waste water is treated by septic system.		Some waste water is not treated or **is discharged to tile, inlet or drainage ditch.**[4]	Collection and treatment of all wastewater is demonstrated.	
3.08) Is the septic system managed adequately to handle the volume of wastewater?	Septic system is ***managed in a manner to prevent pollution to waters of the state.***		Septic system is not managed adequately and **discharges directly to surface waters.**[4]	System operating effectively, without evidence of a discharge.	
3.09) Is the septic system periodically pumped?	Tank pumped more frequently than once a year.	Annual pumping.	Tank is pumped less frequently than once a year.		
Application of Wastewater to Vegetated Infiltration System (If this method is not used, skip to the next section)					
3.10) Is storage used prior to treatment, such as a settling tank or detention basin?	Properly sized settling tank, detention basin or other pretreatment system is used.	Undersized settling tank, lagoon or other pretreatment system.	No pretreatment.		
3.11) Does the system handle the capacity of milking center wastewater generated?	Infiltration area effectively treats the quantity of wastewater generated. ***Treatment area is managed to prevent pollution to waters of the state.***	Infiltration area effectively treats the quantity of wastewater generated, but shows minor erosion, wastewater ponding or burned vegetation.	Infiltration area has excessive erosion, wastewater ponding or burned vegetation.	Properly operating system confirmed by visual inspection of vegetated infiltration system. Refer to *Guidelines for Milking Center Wastewater (Wright and Graves, 1998)* and *Milking Center Wastewater Guidelines (Holmes and Struss, 2009)* for more information.	

A boxed risk level indicates the level required for environmental assurance verification.

Bold Black print indicates a violation of state or federal regulation.

Bold Blue Italic print indicates a management practice consistent with 2018 Right to Farm (RTF) Generally Accepted Agricultural Management Practices (GAAMPs).

Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Application of Wastewater to Vegetated Infiltration System (If this method is not used, skip to the next section) (continued)					
3.12) How is the vegetated infiltration system maintained?	***Vegetation maintained and harvested at least once per year.*** Accumulated solids removed, if needed.	Occasional maintenance.	No maintenance.	Vegetation maintained and harvested. Records of maintenance kept.	
Direct Discharge to Surface Water					
3.13) Is wastewater directly discharged to a lake, drainage ditch, stream, regulated or natural wetlands or other surface waters? See Comments.	***Milk parlor and milkhouse wastewater are managed in a manner to prevent discharge into waters of the state.***		Milking center wastewater is **discharged directly to surface water.**[4]	No discharge present. It is acceptable to discharge milk parlor and milkhouse wastewater into constructed wetlands designed and intended to process those wastes. (NRCS practice standard 656 "Constructed wetland").	
Manure Storage (includes all storage systems used for manure, wastewater or runoff containment)					
4.01) What is the storage capacity of manure systems?	There is six months or greater manure storage or manure is transferred offsite.	There is less than six months storage; adequate land base is available for winter and summer applications.	There is minimal or no manure storage on site. Adequate land base is not available.	Manure Application Risk Index (MARI) shows adequate acres for winter spreading. Records on manure production and storage capacity provided. MAEAP manure storage review sheets or NRCS animal waste management calculations are completed for storages to determine volume. (See FAS 112S.)	

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Manure Storage Systems					
4.02) How far is the liquid manure storage from any well? (Private wells include irrigation, livestock watering, cooling etc. Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees) Use Table 1 in FAS107 for well type identification.*	For private wells: • 150 feet or greater For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well, OR, • Approved isolation distance deviation from the Local Health Department for the well, OR, • Between 200 and 800 feet with approved storage and well, and protective site features.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[3]	Appropriate well isolation distance for site characteristics. Required for MAEAP Farmstead System verification.	
4.03) How far is the dry manure storage from any well? (Private wells include irrigation, livestock watering, cooling etc. Type IIb and Type III (Public wells include wells that service the milkhouse, bathrooms, drinking fountains, etc. on dairy farms or farms with employees) Use Table 1 in FAS107 for well type identification.*	For private wells: • 150 feet or greater OR • 50 feet or greater, for covered facility with protective site features, with an MDARD review. For Type IIb or Type III public wells: • More than 800 feet or greater from the farm well, OR • Approved isolation distance deviation from the Local Health Department for the well OR • Between 200 and 800 feet with approved storage and well, and protective site features.* OR • 75 feet or greater for covered facility with protective site features, with MDARD review.* For Type IIa public wells, refer to FAS 112S.		For private wells: **Less than 150 feet.**[1] For public wells (dairy farms or farms with employees): **Less than 800 feet from the farm well.**[3]	Appropriate well isolation distance for site characteristics. Required for MAEAP Farmstead System verification.	

*See MAEAP water stewardship technician for additional information on criteria for reduced isolation distances.

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Liquid Manure Storage Systems (continued)					
4.04) What design standards are utilized for liquid manure storage structures?	As-built documentation is available. ***Construction design for manure storage and treatment facilities meets standards and specifications in accordance with MI NRCS-FOTG, Concrete Manure Storages Handbook (MWPS-36), Circular Concrete Manure Tanks publication TR-9 (Midwest Plan Service, 1998)***. For steel: Manual of Steel Construction, American Institute of Steel Construction. For concrete: Building Code Requirements for Reinforced Concrete, ACI 318, American Concrete Institute. For earthen storage, the permeability of the earthen liner is known and the earthen storage meets NRCS standard 313: Waste Storage Facility. No evidence of overflow.	The storage was designed and built by professionals, but the as-built design standards are unknown. The storage structure meets the requirements as outlined in Extension Bulletin FAS 112S.	Storage design is unknown and conformance has not been determined or the system is not functioning properly.	Appropriate manure storage design and installation demonstrated. Completed MAEAP manure storage review sheets or as-built engineering standards available. (See FAS 112S) System analysis procedure (seepage meter) provides evidence storage meets conformance standards.	

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Liquid Manure Storage Systems (continued)					
4.05) Are structures properly maintained?	Structure is properly maintained and in good condition. No damage to the liner or breaches are evident. No visible signs of issues with push-off ramps, load-out areas, pumps, piping, etc.	Structure appears to be in good condition.	Lining material integrity broken. Evidence of overflow. Coarse-textured soils, no clay liner. Evidence of extensive cracking, leaning, etc. Structure needs repair.	MAEAP manure storage review sheets completed. (See FAS 112S) Additional Criteria may be required for CNMP development.	
4.06) Are areas adjacent to manure storage structures properly maintained?	Banks are mowed and inspected regularly for potential problems. No brush, trees or animal burrows present.	Banks are not mowed regularly. Woody plant material present.	Lack of maintenance around storage site and/or numerous areas in need of repair and/or burrows present.	MAEAP manure storage review sheets completed. (See FAS 112S)	
4.07) Is clean water (i.e. roof and surface runoff) diverted away from the manure storage facility?	Clean water is diverted away from manure storage.	Clean water is not diverted but storage is designed to accommodate the additional water while still maintaining the freeboard.	Potential exists for overflow of manure storage.	MAEAP manure storage review sheets completed. (See FAS 112S)	
4.08) How is freeboard maintained and overflow prevented in storage structures?	Minimum freeboard is known and observed. ***A minimum freeboard of twelve inches (Six inches for fabricated structures) plus the additional storage volume necessary to contain the precipitation and runoff from a 25-year, 24-hour storm event.*** Freeboard markers are in place.	No evidence of manure overflowing storage. Safe freeboard level is known but not visibly marked. Freeboard not always maintained.	Evidence that manure overflowed the storage structure. Freeboard level is unknown and unmarked.	Appropriate manure storage management demonstrated. Safe freeboard level indicated on storage. Runoff is calculated.	
4.09) If liquid manure storage structures are no longer needed and are to be closed or converted to another use, how are they decommissioned?	Liquid manure storage structures are decommissioned according to the NRCS Practice standard 360 waste Facility Closure.	Liquid manure storage structures are not decommissioned but are closely monitored.	Liquid manure storage structures are abandoned.		

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Solid-Bedded Manure Systems and Composted Manure Systems					
5.01) How are animal facilities with bedded manure packs designed and constructed?	Constructed with a floor of impermeable material or fine-textured soil. Adequate bedding is provided to maintain solid nature of manure. No rainfall or runoff enters the manure area. No waterers in the building.	Medium- to fine-textured soils, limited bedding provided, some rainfall or runoff enters manure area. Waterers in the building.	Building has an earthen floor on coarse-textured soil. **Contaminated runoff directly discharges to surface water.**[4]	Appropriate manure storage design and management for leachate/runoff control.	
5.02) At the farmstead, where is manure temporarily stacked?	***Manure can be temporarily stacked on an impermeable pad with sides. Runoff does not flow onto neighboring property or into surface waters.***	***Manure stacked on the ground with appropriate management to minimize leaching and prevent runoff flow onto neighboring property or into surface waters - such as rotating locations, complete removal of manure, records documenting timing of removal and location used and seeding of previous location.***	Manure is temporarily stacked on the ground without appropriate management to minimize leaching and prevent all runoff such as rotating locations, complete removal of manure, seeding of previous location and records documenting location used. For example: manure is stacked in the same location every year, piles are located within 50 feet of surface water, and/or there is evidence that **manure-contaminated runoff flows to surface water**[4] or to adjacent property.	Appropriate temporary manure stacking demonstrated at the farmstead for surface water and groundwater protection.	
5.03) At the farmstead, how long is manure temporarily stacked?	Less than 365 days with complete removal of manure.		Greater than 365 days without complete removal of manure.	Manure not stacked for more than 365 days. Refer to manure application records.	

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Solid-Bedded Manure Systems and Composted Manure Systems (continued)					
5.04) At the farmstead, what management practices are used to reduce odors and pests from outside temporary stacks?	***Stockpiled manure is at least 50 feet away from property lines or 150 feet away from non-farm homes and stockpiled manure is covered with a tarp, fleece blanket, straw, woodchips or other materials or additives to reduce odors and pests.***	***Stockpiled manure is at least 50 feet away from property lines or 150 feet away from non-farm homes or stockpiled manure is covered with a tarp, fleece blanket, straw, woodchips or other materials or additives to reduce odors and pests.***	Stockpiled manure is closer than 50 feet to property lines or 150 feet to non-farm homes and stockpiled manure is not covered. No additives are used to reduce odors and pests.	Appropriate manure storage management demonstrated for odor and pest control.	
5.05) At the farmstead, how are solid manure storage structures designed and constructed?	Constructed with a floor of concrete, or equivalent material, and with walls that prevent leachate from entering surrounding soils. Leachate and rainfall/snowmelt runoff discharged into a designed system.	Constructed with floor of compacted asphalt or fine- or medium-textured soils. Leachate will have direct contact with earthen floor or side walls. The permeability of the earthen floor is known and the earthen floor meets NRCS Standard 313. Leachate and rainfall/snowmelt runoff discharged into a designed system.	Earthen floor constructed with coarse-textured soils. Rainfall and leachate will have direct contact with earthen floor or sidewalls. Runoff and leachate are uncontrolled and **discharge directly to surface water.**[4]	Appropriate manure storage design and management for leachate/runoff control.	
5.06) At the farmstead, is runoff from solid manure storage structures directly discharging to surface water or groundwater?	***Provisions made to control and/or treat runoff from stored manure.*** And/or a designed and maintained vegetative infiltration area or runoff storage basin effectively handles storage runoff.	Inadequate runoff control. Signs of manure runoff past perimeter of vegetated area or exceeding storage basin capacity.	**Manure storage runoff discharges directly to surface water.**[4]	Appropriate runoff control from manure storage area(s).	

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Solid-Bedded Manure Systems and Composted Manure Systems (continued)					
5.07) In the field, how is manure temporarily stockpiled in relation to surface water?	***Manure stockpiles are kept a least 150 feet from surface waters or areas subject to flooding unless conservation practices are used to protect against runoff and erosion losses to surface waters.***		Manure stockpiles are closer than 150 feet to surface waters or areas subject to flooding, and conservation practices are not used to protect against runoff and erosion losses to surface waters.	Appropriate temporary manure stacking demonstrated in the field for surface water protection.	
5.08) In the field, what management practices are used to reduce odors and pests from manure temporarily stockpiled?	***Stockpiled manure is at least 150 feet away from non-farm homes and stockpiled manure is covered with a tarp, straw or other materials or additives are used to reduce odors and pests.***	***Stockpiled manure is at least 150 feet away from non-farm homes.***	Stockpiled manure is closer than 150 feet to non-farm homes.	Appropriate manure stockpiling demonstrated for odor and pest control.	
5.09) In the field, how long is manure temporarily stockpiled?	***Manure is spread as soon as field and weather conditions allow, and does not exceed six months; or if covered with an impermeable cover, twelve months.***		Manure stockpiled for more than six months without a cover, or more than twelve months with an impermeable cover.	Manure not stockpiled for more than 365 days. Refer to manure application records. For CNMP's manure may be stockpiled in the field for 20 days on soils with a High N Leaching index and 90 days on soils with a Medium N Leaching index. NRCS standard 634.	

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Farm Site Review (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk - 1 (significant hazard)	Records or evidence for MAEAP verification	Your Risk
Outside Livestock Lot Management					
6.01) How far is the livestock lot from surface water?	Livestock lot is more than 300 feet from surface water and ***runoff control protects neighboring land areas and prevents direct discharge to surface waters or groundwater.***	Livestock lot is less than 300 feet from surface water and ***runoff control protects neighboring land areas and prevents direct discharge to surface waters or groundwater.***	Evidence that manure-contaminated runoff flows from lot and **discharges directly to surface water** or to adjacent property.[4]	Appropriate livestock isolation distance from surface water.	
6.02) What efforts are made to divert unwanted drainage from upslope watersheds and roof water from becoming contaminated with manure?	***Provisions are made to collect, store, utilize and/or treat manure accumulations and contaminated runoff from outside open lot(s) used for raising livestock.*** Clean water is diverted away from the livestock lot(s).	Most roof water and upslope watershed drainage are diverted around livestock lot(s). Water that contacts manure is treated or contained and applied to cropland.	No clean water system in place. Most roof water and upslope watershed drainage runs through lot(s).	Appropriate clean water management for livestock lot(s).	
6.03) How is livestock lot runoff managed to protect surface water, groundwater and/or neighboring properties?	All lot runoff is directed to a properly designed and maintained runoff storage basin, or runoff is directed to a designed settling basin and vegetated infiltration area where vegetation is annually harvested. ***No evidence of runoff to surface water, groundwater and/or neighboring properties,*** or ponding in low areas.	***No evidence of runoff flow to surface water*** or ponding in low areas. Vegetation or cropland that is annually harvested exists between lot and surface water.	Evidence of runoff flow **discharging directly to surface water**[4] or intermittent waterway.	Appropriate site management for livestock lot(s). Producer records of manure scraping/collection should be kept and evaluated to assess risk reduction.	

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Outside Livestock Lot Management (continued)					
6.04) How often is manure scraped and removed from livestock lot(s)?	***Manure is scraped and removed periodically from livestock lot(s)*** or other heavy use areas.		Manure is seldom scraped and removed from lot and feeding and watering areas.	Appropriate manure management in livestock lot(s).	
6.05) What type of floor or base does the livestock lot(s) have?	Properly maintained concrete, compacted asphalt, or other equivalent material.	Continuous-use, compacted dirt or compacted gravel. Minimal plant material growing.	Poorly compacted dirt or gravel layer as indicated by plant growth.	Appropriate floor or base in livestock lot(s).	
Pasture Management					
7.01) Are there current soil tests on the pastures?	***All fields are sampled and tested on a regular basis***, at least every one to four years, depending on crops being grown and the cropping system.	Most fields are sampled and tested every one to four years. Producer plans to bring all field soil tests up-to-date within the next three years. (See also 10.01)	Fields have not been tested within the past four years.	Field names or map. Acres in the cropped portions of the field. Up-to-date soil test reports or schedule to bring all tests up-to-date. If pursuing a CNMP, soil samples should be taken every three years or more frequently.	
7.02) What is the condition of pasture vegetation?	Pasture is well-managed with all areas vegetated. ***Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface and groundwater.*** Or no contaminated runoff is noted.	Pasture is well-managed and vegetated except in feeding and watering areas, which are scraped. ***Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface and groundwater.*** Or, no contaminated runoff is noted.	Pasture is overgrazed with bare spots. Erosion may be present. **Runoff from pastures is carrying sediment and nutrients to surface waters**[4] or neighboring property.	No direct discharge from pasture(s).	

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Pasture Management (continued)					
7.03) How is the pasture managed to protect surface water?	***Livestock are excluded from actual contact with streams or watercourses except for controlled crossings and accesses.*** Flash grazing may be implemented to control vegetation between fenced-in areas.	Herd density in the pasture is such that the stream bank remains vegetated with no eroded areas. Animals are not allowed to congregate under trees close to the waterway causing bare areas. And/or the practices of flash grazing is being implemented to control vegetation between fenced-in areas.	Runoff results in **direct discharge to surface waters.**[4] Livestock have free access to streams or watercourses, causing erosion.	Pasture managed to protect surface water from erosion and contamination demonstrated. Refer to *Prescribed Grazing 528 (USDA-NRCS-MI eFOTG)* or *Acceptable Practices for Managing Livestock along Lakes, Streams and Wetlands (E-3066, MSUE, 2008)* for more information.	
7.04) If you plan to build a controlled stream crossing or access for livestock, do you have a permit from the of the Michigan Department of Environmental Quality, Water Resources Division?	A Part 301, Inland Lakes and Streams permit has been obtained.	**No.**[4]			
7.05) What is being done to reduce manure concentration around watering tanks/feeders in pasture areas?	Water tank/feeding areas are rotated to different areas of pasture. Or, watering/ feeding areas are permanent, but manure is removed frequently to prevent concentration of nutrients. ***Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface water and groundwater.***	Watering/feeding areas are permanent, but manure is removed at least annually to prevent concentration of nutrients. ***Runoff from pasture feeding and watering areas travels through a vegetated filter area to protect surface water and groundwater.***	Watering/feeding areas are permanent with infrequent or no manure removal. There is evidence of **direct discharge to surface water**[4] or ponding in low areas.	Proper manure management around water and feed demonstrated.	

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Farm Site Review (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Pasture Management (continued)					
7.06) How are animals handled in pastures or fields when ground is frozen or snow-covered?	Livestock are removed from fields or pastures during the winter months where runoff is a concern.	Livestock are grazed on fields or pastures for part of the winter months where runoff is a concern.	Livestock are present all winter on pastures or fields where runoff is a concern.		

Silage Storage

8.01) Does untreated silage leachate or polluted runoff run to a low area and pond?	***Provisions are made to control and/or treat leachate to protect groundwater and surface water.***		Silage leachate ponding and/or runoff evident.	Appropriate silage leachate management demonstrated.	
8.02) Is clean water (rainwater, snow melt, etc.) diverted away from silage?	Clean water is diverted away from silage.		Clean water is not diverted away from silage, resulting in contaminated runoff.		
8.03) Are silage leachate and contaminated runoff collected and/or treated?	***Provisions are made to control*** contaminated runoff ***and/or treat leachate to protect groundwater and surface water*** from a direct discharge. (Includes capturing of leachate from drains.) Designed system or management controls are in place.	Designed system in place but not maintained.	No system in place or lack of appropriate management or **direct discharge to surface water or groundwater**.[4]	Appropriate silage leachate management demonstrated.	
8.04) At what moisture content is silage typically harvested and stored?	Generally ***below 67 percent.***	Between 67 and 80 percent.	Over 80 percent.		

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Silage Storage (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
General Silage Storage					
8.05) Does an emergency plan exist for times when leachate production exceeds current management controls?	An up-to-date written plan is available and is reviewed with all applicable employees.	Emergency action plan is incomplete or out-of-date.	No emergency action plan that covers excess leachate.	An up-to-date emergency action plan.	
8.06) Are whole tires or tire sidewalls used for securing the cover on bunker silos?	- Use 3,000 or less whole tires (unless MDEQ approved). No limit on tire side walls. - Whole tires are properly drilled for water drainage.		• **Use more than 3,000 whole tires without MDEQ approval.**[11] • Whole tires are not drilled for water drainage.		
8.07) How are tires and tire sidewalls stored?	Tire and tire sidewall piles are: - Not more than 40’ x 200’ horizontal area. - Not higher than 15’. - No closer than 30’ between piles. - No closer than 20’ from property lines. - No closer than 60’ from buildings and structures. - Not stored with hazardous products.		Tire and/or tire side-wall storage is not in conformance with low risk guidelines.		
8.08) In the case of a tire fire, does the farm have an up-to-date emergency farm plan?	The farm has an up-to-date emergency farm plan which is reviewed with all applicable employees.	More than one-year-old plan or an incomplete plan is available.	**No emergency farm plan when more than 3,000 whole scrap tires are stored on the farm.**[4]	An up-to-date emergency action plan.	
Bunker Silos					
8.09) What type of floor does the silage storage have?	Concrete, compacted asphalt or equivalent material. No excessive cracking (cracks that a finger can fit into or spider webs) or cracks are repaired.	Earthen floor with fine-textured soils (clay, clay loam, silty clay loam, sand clay, sandy clay loam and silty clay).	Earthen floor has permeable soils. Or, concrete, asphalt or lined surface contains many cracks.	A maintained impervious surface or fine-textured earthen floor.	

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Silage Storage (continued)

Risk question	Low Risk – 3 (recommended)	Medium Risk – 2 (potential hazard)	High Risk - 1 (significant hazard)	Records or evidence for MAEAP verification	Your Risk
Bunker Silos (continued)					
8.10) Is silage covered?	Silage is covered to prevent silage leachate.	Cover leaks.	No cover.		
8.11) Are the silage pad and surrounding area kept clean and free of loose silage?	Pad and surround area are kept clean.	Evidence of spilled or loose silage.	Pad is not kept clean.		
8.12) Is silage kept with a vertical face to reduce contact with clean water?	Yes.		No.		
Upright Silos					
8.13) If there is a floor drain, is leachate collected, treated and/or stored, and applied at agronomic rates?	All leachate is collected, treated, and/or stored and applied according to nutrient management plan.		Leachate is not collected and/or **directly discharges to surface water.**[4]	Appropriate silage management demonstrated.	
8.14) How often is silo inspected?	Twice a year.	Once a year.	Less than once a year.		
8.15) Is leachate evident around the outside of the silo?	No.	Yes. Leachate is treated or stored.	Yes. Leachate is not treated or stored.		
Silage Bag Management					
8.16) Are holes repaired and the bag water tight?	Yes, holes are repaired and the bag is watertight.	Some holes are repaired.	Holes are not repaired, and moisture is entering the bag.		

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Silage Storage (continued)					
Risk Question	**Low Risk – 3 (Recommended)**	**Medium Risk – 2 (Potential Hazard)**	**High Risk - 1 (Significant Hazard)**	**Records or Evidence for MAEAP Verification**	**Your Risk**
Silage Bag Management (continued)					
8.17) Is there a mechanism for collecting or treating or utilizing accumulated leachate?	Yes, leachate is collected and does not pond or reach surface water.		No. **Leachate runs from bags to surface water.**[4]	Appropriate silage management demonstrated.	
8.18) Is plastic disposed of in a licensed landfill or recycled?	Plastic is either recycled or disposed of in a landfill.	Plastic is stored on-site.	**No, plastic is burned on-site.**[4]		
Drinking Water Well Condition					
9.01) Is there an unused well located on the farmstead?	No unused well or abandoned well properly sealed.	Unused well temporarily abandoned properly: - Meets minimum isolation distances - Is disconnected from any water distribution piping. - Has the top of the casing securely capped.	**Unused, unsealed well at farmstead.**[1]	Required for MAEAP Farmstead System verification.	
9.02) How often is drinking water tested for nitrates and bacteria?	Tested yearly.	Tested within the past three years.	No water testing done, or more than three years since last test.	Required for MAEAP Farmstead System verification.	
9.03) What are the water test results?	No coliform bacterial or nitrate detected.	Water contamination detected. Public water well(s) test below health advisory limits.	Water contamination detected. **Public water well(s) test above health advisory limits.**[3]	Required for MAEAP Farmstead System verification.	

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Manure Spreading Plan

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
10.01) How often are fields tested for nutrient levels (P, K, Ca, Mg) and pH?	***All fields are sampled and tested on a regular basis,*** at least every one to four years, depending on crops being grown and the cropping system.	Most fields are sampled and tested every one to four years. Manure is not applied to fields without a current soil test. Producer plans to bring all field soil tests up-to-date.	Fields have not been tested within the past four years.	Field names or map. Acres in the cropped portions of the field. Up-to-date soil test reports or schedule to bring all tests up-to-date. On farms pursuing a CNMP, soil samples must be taken every three years or more frequently.	
10.02) Do soil sampling procedures adequately represent field conditions?	One composite sample is taken from uniform field areas of 15 to 20 acres or from uniform management areas on grid or zone sampling procedures.	One composite sample is taken from uniform field areas of 20 to 40 acres.	One composite sample is taken from areas of greater than 40 acres.	Predominant soil types/soil maps. Cropping histories. Proper soil sampling procedure.	
10.03) How is the nutrient content of manure determined?	***Laboratory analysis for percent dry matter (solids), ammonium, and total N, P and K.***	Book values or standard nutrient content values used.	Manure nutrient content is unknown or not considered.	All manure analyses or book values on file. Multiple manure samples collected over one to two year period provide evidence of manure nutrient values.	
10.04) How are desired application rates achieved?	Manure analysis (book value, manure test, or mass balance) and ***field application rates are known.***		Application rate is not known.	Rate of manure applied known for all spreaders. Records indicate date of calibration.	

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Manure Spreading Plan (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
10.05) How is the soil's ability to hold water and nutrients considered when calibrating for manure application?	Rates are at or below a level that manure does not run off or escape via tile drains. Tile outlets inspected after application. ***Manure is prevented from reaching the tile lines.***		Manure application rates may be above the soil's ability to hold the water and nutrients. Manure reaches the tile lines and/or **directly discharges to surface water.**[4]	No evidence of runoff or tile discharge. Tile lines monitored before and after manure application.	
10.06) How are fertilizer application rates determined?	***Consistent with Michigan State University recommendations*** and manure nutrients are credited. When MSU recommendations are not available other land grant university recommendations developed for the region may be used.	Fertilizer rates are based on soil testing lab recommendations but not consistent with MSU or other land grant university recommendations.	Fertilizer is not based on soil testing.	Applications consistent with MSU recommendations (MSU soil test printout or calculated MSU or other land grant university recommendations on field). When MSU recommendations are not available, other land-grant university recommendations developed for the region may be used.	

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Manure Spreading Plan (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
10.07) What manure management records are maintained?	Complete application ***records of manure analysis, soil test results and rates of manure application for individual fields are maintained.***	A minimum of one season of manure application records, or partial manure application records have been kept. Complete manure application records will be kept immediately and will be available for review at the time of re-verification.	Minimal or no records maintained.	Additional nutrient management records that are needed. • Date(s) of manure application and incorporation when applicable. • Rate of manure application. • Weather conditions during application of manure (e.g., sunny, 70 degrees F). • Field conditions during application of manure (wet, dry, frozen, etc.) • Manure/wastewater quantities produced and nutrient analysis results. • Records of rental or other agreements for application of manure/wastewater on land not owned by the producer. • Record of manure/wastewater sold or given away to other landowners.	

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Manure Spreading Plan (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
10.08) Are weather forecasts monitored when making decisions about field applications of manure?	Weather forecasts are monitored before field application decisions. Manure applications are delayed if excessive precipitation is predicted. Manure is not applied if greater than or equal to 70% probability of more than 0.5 inches of precipitation is forecasted within the next 24 hours.	The weather forecasts are monitored but manure applications are based on when the storage is full or timing is convenient. Application may be made when excessive precipitation is predicted	The weather forecasts are not monitored. Manure applications made regardless of weather forecasts.	Producer has a procedure in place to monitor weather forecasts prior to making decisions about field application(s) of manure. Manure is not applied when excessive precipitation is predicted.	
10.09) How are manure nitrogen (N) application rates managed?	***Manure nitrogen rates do not exceed requirements of the crop*** and are credited toward fertilizer needs. Pre-sidedress nitrate test (PSNT) may be part of the program.	Manure nitrogen credits are considered but not to their full extent.	Commercial nitrogen is not reduced to account for manure nitrogen credits.	Manure rates do not exceed crop N needs, consistent with GAAMPs.	
10.10) How are manure phosphorus (P) application rates managed?	***High testing fields (>150 ppm Bray P1) do not receive manure, and fields between 75 and 150 ppm P receive no more than four years, crop P205 removal if one-year application, is impractical.***	High testing fields (>150 ppm Bray P1) removed from spreading plan, but crop removal rates are not followed.	Manure application rates are not based on soil tests and/or crop removal rates.	Manure rates do not exceed crop P needs. If developing a CNMP, refer to USDA-NRCS 590 Standard.	
10.11) Are odor reduction practices utilized when manure is land applied?	***Manure is incorporated within 48 hours or injected into the soil.***	If manure is not incorporated within 48 hours: ***Conservation practices*** (residue management, cover crops, perennial crops, etc.) ***are used to protect against runoff and erosion losses to surface waters*** or fields are snow covered or frozen preventing incorporation or injection.	All manures are surface applied and may not be incorporated until field is covered or until spring tillage.	Manure application records. Incorporation exceptions include: pastures or forage crops, or fields where crop residues are retained for erosion control or records show fields were snow covered or frozen preventing incorporation or injection.	

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Conservation Practices for Fields Used for Manure Application

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
11.01) Are manure applications managed to avoid ponding, soil erosion and/or runoff?	***Liquid manure applications are being managed in a manner to optimize nutrient utilization and do not result in ponding, soil erosion losses, or manure runoff to adjacent property, drainage ditches or surface water.***	Some consideration is given to ponding, soil erosion and/or runoff.	Ponding, soil erosion and/or runoff are not considered. Manure **directly discharges to surface water.**[4]	No evidence of manure ponding, soil erosion and/or runoff.	
11.02) Have environmentally sensitive areas been identified (land near surface water, highly erodible soils , soils with high leaching or runoff potentials, wells and surface inlets) that require additional management when applying nutrients (manure and fertilizers)?	Environmentally sensitive areas are identified. Family members, employees and contractors are aware of and understand the management practices to protect these areas.	Some environmentally sensitive areas are identified.	Environmentally sensitive areas are not considered.	Sensitive areas identified on field maps with appropriate management or setbacks: • Areas next to surface water. • Fields with shallow ground water. • Fields with water wells. • Areas near surface water inlets. • Fields with highly erodible soils. • Fields with highly leachable soils. • Fields with high runoff potential. Training/communication plan to inform workers and contractors of appropriate management or setbacks is in place.	

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Conservation Practices for Fields Used for Manure Application (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
11.03) How are fields selected for spreading on frozen and snow-covered ground?	No applications on frozen or snow-covered ground without injection or incorporation.	Manure Application Risks Index (MARI)has been completed for each field receiving manure on frozen or snow-covered ground. Frozen or snow-covered fields receiving manure have met MARI criteria for either Very Low or Low rating ***and no liquid manure is applied on slopes greater than 3%, and no solid manure is applied to slopes over 6%.***	Applications are made to fields where runoff to water resources may occur.	MARI completed for each field receiving winter manure application, or spreading plan does not include winter spreading.	
11.04) Is soil erosion under control on the farm fields?	Soil erosion losses are within tolerances as documented by the Revised Universal Soil Loss Equation (RUSLE2) and the Wind Erosion Prediction System (WEPS). Minimal evidence of erosion and no evidence of concentrated water flows. Cover crop may be in place.	RUSLE2 and WEPS are run on fields that are not: In pasture or hay ground, or no-till planting systems. Receiving fall tillage, with >30% residue on less than 12% slopes. Receiving more than one pass fall tillage that leaves fields rough with >40% residue and less than 8% slopes. And regardless of fall tillage, spring tillage leaves > 20% residue. And for all of the above there is no evidence of sheet, rill or gully erosion.	Excessive soil erosion is occurring on the farm.	RUSLE2 and WEPS calculations completed and on file.	

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Conservation Practices for Fields Used for Manure Application (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
11.05) How is manure generally applied to fields?	***Manure is incorporated within 48 hours or injected into the soil, and/or conservation practices*** (residue management, cover crops, perennial crops, etc.) ***are used to protect against runoff and erosion losses to surface waters.***	Manure is generally surface-applied, and conservation practices are employed to reduce the risk of runoff.	Manure is applied in a manner that results in ponding, soil erosion losses, or manure runoff to adjacent property, drainage ditches or **discharges directly to surface water.**[4]	Manure application records.	
11.06) How are streams, wetlands, farm ditches and other water bodies protected from manure runoff?	***Manure is incorporated within 48 hours or injected. Or, surface applications are not done within 150 feet of surface water. Or, filter strips, riparian buffer strips, and other conservation practices are maintained between fields and surface waters on the farm and around surface water inlets.***	Conservation practices are maintained on some fields.	Manure is applied within 150 feet of surface waters and not incorporated without conservation practices. And/or, manure occasionally reaches neighbor's property.	Field maps with setbacks and conservation practices identified. Records of manure incorporation.	
11.07) How are field tiles managed to prevent manure discharge to surface water?	***Liquid manure is prevented from reaching tile lines.*** Management practices are in place to prevent runoff to surface inlets. Tile line outlets are monitored.		Tile outlets are not monitored for manure discharge.	Tiled fields identified on map. Record of tile flow before and after application (flow rate, color and odor). It is recommended tile outlets are marked where possible using either physical markers (stakes or flags) or GPS.	

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Conservation Practices for Fields Used for Manure Application (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Manure Pipeline, Hose and Irrigation System Management					
11.08) If liquid manure is applied through an irrigation system, is care taken to assure that application rates do not exceed soil infiltration rates?	***Application rates do not exceed soil infiltration rates.*** System is monitored for proper function.		Application rates exceed soil infiltration rates, and/or runoff occurs.	No field evidence of runoff. Irrigation records.	
11.09) When systems are connected to a surface or well water source are appropriate backflow prevention devices in place and properly maintained when applying liquid manure through irrigation?	***Backflow prevention safety devices,*** chemigation valve that creates an air gap or Reduced Pressure Zone (RPZ) valve, ***are used*** and properly maintained when irrigating with liquid manure.	***Backflow prevention safety devices,*** chemigation valve that creates an air gap or Reduced Pressure Zone (RPZ) valve, are almost always used and/or properly maintained.	Backflow prevention devices are not used and/or properly maintained.	Operational backflow prevention devices field confirmed.	
11.10) When manure is transferred through a pipeline or hose is a system in place to continuously monitor for leaks and to rapidly stop flow if required?	Automatic or remotely-controlled shut down system installed.	Remote communication system in place and pump operator is always on standby when manure is being pumped.	Leaks not immediately detected. No means for remote communication or automatic shutdown. Delayed response time for system shutdown.	Satisfactory explanation of monitoring system provided by owner	
11.11) Are pipes, hoses and other system components in good repair, properly installed and supported, protected from damage and operated according to manufacturer recommendations?	System is regularly inspected and maintained. Manufacturer recommendation for proper installation, operation and maintenance are followed.		Leaks not immediately detected. No means for remote communication or automatic shutdown. Delayed response time for system shutdown.	This question is not required for MAEAP verification since the verifiers cannot verify operations based on manufacturer recommendations. 11.10 and 11.12 deal with the same topic in areas that can be verified. This question is for discussion and increasing awareness.	

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Conservation Practices for Fields Used for Manure Application (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Manure Pipeline, Hose and Irrigation System Management (continued)					
11.12) When disassembled or moved, how is the residual manure in the system handled?	An air-driven device is used, or system is flushed with water, or other means are employed to properly remove manure from the system prior to disassembly.	Residual manure is drained and collected for land application or returned to storage.	System is disassembled with manure allowed to dump at low points.	Satisfactory explanation of hose disassembly provided by owner	
11.13) Is care taken to ensure that irrigated manure does not flow into subsurface drains?	Field conditions are monitored before, during and after irrigation, and liquid manure is prevented from reaching tile lines. Appropriate measures are taken to avoid surface water discharges.		No care is taken to monitor field conditions, tile drains, etc., when irrigating liquid manure. **Direct discharge to surface water**.[4]	No evidence of manure flow into surface drains.	
11.14) If there are instances where diluted wastewater (≤ 1 percent solids) is applied to fields testing over 150 ppm P soil test, can the farmer document appropriate conditions for application?	***- Growing plants in the application area.*** ***- Wastewater application rate supplies less than 75% P crop removal.*** ***- Annual sampling of wastewater P content.*** ***- Soil P test levels decline over time.*** ***- No other P applied to field.*** ***- Tile drain fields monitored for manure flow.***	Appropriate conditions are partially met.	Appropriate conditions for dilute wastewater application are not present.	Appropriate dilute wastewater management demonstrated. Refer to the Manure Management and Utilization GAAMPs. Note: The CNMP guidelines and NRCS Nutrient Management Practice standard (590) require the use of the Michigan Phosphorus Index (PI) when wastewater is applied to fields testing over 150 ppm P soil test. A PI of 17 or lower is needed.	

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Emergency Plan and Employee Training

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
12.01) Is there an emergency plan in place in the event of a manure spill?	Up-to-date written plan available and understood by all appropriate farm employees. ***All uncontained spills or releases should be reported to the MDARD Agriculture Pollution Emergency Hotline: 1-800-405-0101,*** or the MDEQ Pollution Emergency Alerting System: 1-800-292-4706	Incomplete or out-of-date action plan available.	No emergency action plan that deals with manure spills.	Up-to-date emergency farm plan, such as MSU Extension Bulletin E-2575 "Emergency Planning for the Farm".	
12.02) What method of training is used to inform employees about the farm's emergency plan?	Employees are trained either by formal (class) or informal methods to respond properly to spills and discharges.	Training is sporadic or occasional.	No training is provided to employee responsible for manure handling.		

Mortality Management and Veterinary Waste Disposal

13.01) How are animal mortalities handled?	Animals are buried, incinerated (requires permit), land filled, placed in a compost pile or picked up by a rendering service, anaerobically digested or other methods as approved by the Director of MDARD. Mortality is removed within 24 hours of death or stored for a maximum of seven days at 40 degrees F or a maximum of 30 days at 0 degrees F before proper disposal of the carcass. Records of mortality disposal, including burial, are kept on file and available for inspection.		**Animals are not buried, incinerated, land filled, placed in a compost pile or picked up by a rendering service within 24 hours of death. Or, stored for more than 7 days at 40 degrees F or more than 30 days at 0 degrees F before disposal of the carcass.**[5]	Disposal of dead animal bodies is done according to the Bodies of Dead Animals Act (BODA), as amended in 2007. Up-to-date forms on file for verification. (See FAS 112S.) Forms for recording mortality disposal including burial record forms and compost record forms are available on the MAEAP website at: http://www.maeap.org/get_verified/livestock_system.	
13.02) If mortality composting is used, what are the isolation distances for the composting site?	Static pile site is located at least 200 feet from waters of the state, 200 feet from any well, 200 feet from nearest non-farm residence and 2 feet above seasonal high water table.		**Site is located less than 200 feet from waters of the state, 200 feet from any well, 200 feet from nearest non-farm residence, and 2 feet above seasonal high water table.**[5]	Isolation distances meet BODA requirements. The BODA supplement, available at the MAEAP.org website, has been completed and reviewed.	

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Mortality Management and Veterinary Waste Disposal (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Mortality Composting (continued)					
13.03) Is the site properly selected?	Site was properly selected for compost system regarding setbacks and composting method.		Site was NOT properly selected for compost system regarding setbacks and composting method.	Combining mortality from multiple sites may make the farm a large CAFO. See: http://msue.anr.msu.edu/news/can_combining_mortality_composting_from_two_separate_farms_constitute_a_caf	
13.04) Is the compost system sized to handle the normal, expected mortality for the facility?	System capacity is adequate for the mortality at all times.	Capacity is normally adequate; however, system capacity is at times exceeded because of normal fluctuations in mortality rate.	System is sized inadequately to handle the volume of mortality for the operation.	Properly operating compost system confirmed by visual inspection of mortality compost.	
13.05) Does the composting process follow standards identified in the Bodies of Dead Animals Act, (BODA), as amended in 2008?	Current BODA standards followed.		**BODA standards not followed.**[5]	Practices are followed as described in the Michigan Animal Tissue Composting Operation Standard (MATCOS), available online at: http://www.michigan.gov/documents/mda/BODA_Composting_Operational_Standards_216592_7.pdf. The BODA supplement has been completed and reviewed.	
13.06) Is compost actively aerated and temperature monitored at least weekly through three heat cycles?	Yes.		**No.**[5]	Compost is properly managed.	

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Mortality Management and Veterinary Waste Disposal (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
Mortality Composting (continued)					
13.07) Are records of compost management being kept according to BODA?	Yes.	Partial composting records have been kept. Complete composting records will be kept immediately and will be available for review at the time of reverification.	**No.**[2]	See FAS 112S, Proper Disposal of Dead Animals Worksheet for the required compost records.	
13.08) How are animal health care needles and syringes disposed?	Sharps are put into a puncture resistant container, labeled and taken to licensed landfill.		**Disposal at landfill without protective containment, or disposed of on the farm.**[2]	Presence of a sharps disposal container.	
13.09) How are unwanted or unusable animal medications and healthcare products disposed of?	Taken to licensed landfill or veterinarian or distributor for disposal.		**Flushed down the drain, dumped on the farm or dumped in the manure pit.**[2]		

Odor Management

14.01) If the farm has 50 Animal Units (AU) or more, was the Michigan Right to Farm GAAMP for Site Selection and Odor Control for New and Expanding Livestock Facilities (Site Selection GAAMPs) used to site new or expanding livestock production facilities constructed after January 1, 2017?*	Farm has built new or expanded since January 1, 2017 and has Michigan Department of Agriculture and Rural Development (MDARD) ***Site Selection GAAMPs*** verification. MDARD verification is required for sites housing 50 AU or greater in Category 1 and Category 2 locations.		The farm has built new or expanded since January 1, 2017, and does not meet all of the ***Site Selection GAAMPs***, or the determination has not been made.	Consistent with Site Selection and Odor Control GAAMPs.	

* These questions do not apply to farms where siting is not applicable, such as farms located in municipalities with populations greater than 100,000 where a zoning ordinance has been enacted to allow for agriculture. In addition, siting does not apply to research and educational institutions, or other locations as determined by MDARD.

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Odor Management (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
14.02) If the farm has 50 Animal Units (AU) or more, was the Michigan Right to Farm GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Facilities (Site Selection GAAMPs) used to site new or expanding livestock production facilities constructed after June 1, 2000 and prior to December 31, 2016?*	Farm has Michigan Department of Agriculture and Rural Development (MDARD) ***Site Selection GAAMPs*** verification. MDARD verification is required for sites housing 500 AU or greater in a Category 1 location or 250 AU or greater in a Category 2 location. The farm has built new or expanded between 2000 and 2016 to house between 50 and 499 AU in a Category 1 location or between 50 and 249 AU in a Category 2 location and the producer submitted the Siting checklist to MDARD for an informal review and MDARD determined the site meets all of the ***Site Selection GAAMPs.***	The farm has built new or expanded between 2000 and 2016 to house between 50 and 499 AU in a Category 1 location or between 50 and 249 AU in a Category 2 location and the producer used the Siting checklist and the producer determined the site meets all of the ***Site Selection GAAMPs.***	The farm has built new or expanded since 2000 and does not meet all of the ***Site Selection GAAMPs***, or the determination has not been made.	Consistent with Site Selection and Odor Control GAAMPs.	
14.03) If the farm has less than 50 Animal Units, was the Michigan Right to Farm GAAMPs for Site Selection and Odor Control for New and Expanding Livestock Facilities (Site Selection GAAMPs) used to determine the site category for facilities constructed after June 1, 2000*	The farm proactively achieved verification under the Michigan Right to Farm ***Site Selection GAAMPs***.	Land use zoning allows for agriculture or the location has been determined to be a Category 1, 2, or 3 site and is not required to complete the ***Site Selection GAAMPs*** verification process.	The farm has been determined to be a Category 4 location and is not eligible for MAEAP Livestock or Farmstead verification.	Zoning map or zoning use description provided or category determination provided by MDARD. See FAS 112S	

* These questions do not apply to farms where siting is not applicable, such as farms located in municipalities with populations greater than 100,000 where a zoning ordinance has been enacted to allow for agriculture. In addition, siting does not apply to research and educational institutions, or other locations as determined by MDARD.

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Odor Management (continued)

Risk Question	Low Risk – 3 (Recommended)	Medium Risk – 2 (Potential Hazard)	High Risk - 1 (Significant Hazard)	Records or Evidence for MAEAP Verification	Your Risk
14.04) Has there ever been an odor complaint?	No.	Yes, but situation was mediated without third party involvement.	Yes, MDARD was called in and determined the farm was not following GAAMPs and the farmer chose to not continue to work with MDARD to resolve the issues and come into conformance with GAAMPs.	No odor complaints, or no verified odor complain(s) that were not resolved.	
14.05) Does the farm have an odor management plan?	An odor management plan has been developed and implemented. ***Farm is managed to minimize odor impacts upon neighbors.***	A partial odor management plan has been developed and implemented.	No odor management plan has been developed.	A written odor management plan has been developed and reviewed. (See FAS 112S Odor Management Plan.)	

Other Environmental Risks in the Livestock System

15.01) If the groundwater and surface water pumps have a combined capacity to pump more than 100,000 gallons per day (70 gallons per minute) for agricultural purposes has "water use" been registered and reported to the State of Michigan?	Pump capacity is less than 100,000 gallons per day (70 gallons per minute), OR, registered and reported annual water use to Michigan Dept. of Agriculture and Rural Development.		**Pump capacity is greater than 100,000 gallons per day (70 gallons per minute) and water use is not reported to the State of Michigan.**[13]	Farm records indicate compliance.	
15.02) Are there other activities, products, processes/equipment, services, byproducts, and/or wastes at this farm that pose contamination risks to groundwater or surface water?	No additional contamination risk(s) are identified.	Plan to mitigate the identified contamination risk(s).	No plan to mitigate identified contamination risk(s).	No other environmental risks found.	

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Livestock Improvement Action Plan

Develop a Livestock Improvement Action Plan for risks on the farm beginning on the inside cover of this bulletin. Once the plan is implemented, MAEAP Livestock System verification can be requested by calling the Michigan Department of Agriculture and Rural Development at (517) 284-5609.

Table 1. Legal citations for environmental risks in Livestock•A•Syst

Footnote	Michigan Law	Description
1	Public Health Code, Public Act 368 of 1978, as amended	Part 127: Water Supply and Sewer Systems
2	Public Health Code, Public Act 368 of 1978, as amended	Part 138: Medical Waste Regulatory Act
3	Safe Drinking Water Act, Public Act 399 of 1976, as amended	
4	Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended	Part 31: Water Resources Protection
5	Bodies of Dead Animals Act, Public Act 239 of 1982, as amended	
8	Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended	Part 115: Solid Waste Management
9	Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended	Part 55: Air Pollution Control
10	Grade A Milk Law, Public Act 266 of 2001, as amended	
11	Natural Resources and Environmental Protection Act Public Act 451 of 1994, as amended	Part 169: Scrap Tires
13	Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended	Part 327: Great Lakes Preservation

Table 2. Federal, state and local environmental requirements for operation of this farm business.

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline — 1-800-662-9278, MDARD information — 1-800-292-3939.

Environmental regulatory requirements	Description	Frequency	Administering Agency	Your Expiration Date
Private pesticide applicator certification	Any persons using or supervising the use of restricted-use pesticides (RUP) in the production of an agricultural commodity on their own or their employer's land must be a certified pesticide applicator.	3 years	MDARD/Pesticide and Plant Pest Management Division (PPPM)	
Pesticide safety training for pesticide workers	The federal Worker Protection Standard for agricultural pesticides requires employers of pesticide handlers and workers to train employees on pesticide safety. Agricultural employers must be able to verify compliance.	Each employee must be trained every 5 years	MDARD/PPPM	
NPDES permit CAFO	National Pollutant Discharge Elimination System permit for large concentrated animal feeding operations (CAFOs).	5 years or as noted on permit	MDEQ/Water Resources Division	
Farm motor vehicle fuel storage tanks greater than 1,100 gallon capacity (above- and below-ground tanks)	Fuel storage tanks have to be certified (aboveground) or registered (underground); a site plan has to have been submitted to the LARA before the installation is placed into service. Smaller tanks have other requirements to be met.	Annual	Department of Licensing and Regulatory Affairs (LARA)	
Air use permit	Permit to install and operate equipment or processes, which may emit air contaminants (incinerators for burning animal carcasses or manure, and biodigesters and associated equipment are examples).	Before construction	MDEQ/Air Quality Division	N.A.
Groundwater discharge permit	Any discharge of waste or waste effluent into or onto the ground (e.g., egg wash water and milk cooling water [over 10,000 gallons/day] that is discharged), and any livestock facility over 5,000 animal units.	5 years	MDEQ/Water Resources Division	
Well permit	A person who installs a well, pump or pumping equipment shall comply with applicable laws, regulation, ordinances and codes.	Before construction	Local health department	N.A.
Septic permit (house and farm operation)	The first step in the process of determining if a piece of land that does not have municipal wastewater services available can be considered for an on-site septic system.	Before construction	Local health department	N.A.

Table 2. Federal, state and local environmental requirements for operation of this farm business.

This table contains the typical requirements for a farm business. There may be additional environmental requirements due to the type of operation and location. Contact the local or state permitting agencies for further information: MDEQ Environmental Assistance Hotline — 1-800-662-9278, MDARD information — 1-800-292-3939.

Environmental Regulatory Requirements	Description	Frequency	Administering Agency	Your Expiration Date
Land and water interface construction permits	Construction activities (dredging, filling, draining, construction, structure placement) in, across, under water.	Before construction	MDEQ/ Water Resources Division	N.A.
Soil erosion and sedimentation control permit	Earth change activities within 500 feet of a lake or a stream, or that will disturb an area greater than 1 acre in size.	Before construction	County soil erosion permitting agency	
Water use reporting	Agricultural water users with the capacity to withdraw surface or groundwater that exceeds 100,000 gallons per day (70 gallons per minute) are required to report actual water withdrawals annually.	Annual	MDARD	

Other Environmental Guidelines	Description	Administering Agency
Manure management and utilization	The Michigan Right to Farm Act (Act 93 of 1981) requires the establishment of generally accepted agricultural and management practices (GAAMPs). Agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance litigation. The GAAMPs are reviewed annually. The latest GAAMPs can be accessed at: **www.michigan.gov/mdard**.	MDARD
Pesticide utilization and pest control		
Nutrient utilization		
Site selection and odor control for new and expanding livestock production facilities		
Irrigation water use		
MAEAP verification: Livestock, Farmstead, Cropping and Forest, Wetlands and Habitat Systems	MAEAP systems verification (PA 1 & 2, 2011) is valid for five years. MAEAP verification in good standing is dependent on following the practices specific to each system, being in conformance with the applicable GAAMPs, an annual plan review and update (livestock system) and updates as necessary as conditions change on the farm.	MDARD

Animal Unit (AU) Conversion Factors by Animal Type and Class			
Animal Type	**Class**	**Average Animal Weight**	**Quantity**
1,000 Beef cattle or cow/calf pairs = Large CAFO	CALF	450	
	HIGH FORAGE	750	
	HIGH ENERGY	750	
	HIGH FORAGE	1100	
	HIGH ENERGY	1100	
	COW	1000	
700 Mature dairy cattle (whether milked or dry cows), or 1,000 Veal calves = Large CAFO	CALF	150	
	CALF	250	
	HEIFER	750	
	HEIFER	1000	
	LACTATING COW	1400	
	DRY COW	1400	
	VEAL	250	
30,000 Laying hens or broilers liquid, or 125,000 Chickens dry (other than laying hens), or 82,000 Laying hens dry = Large CAFO	DRY SYSTEM		
	LIQUID SYSTEM		
	PULLETS		
55,000 turkeys = Large CAFO	ALL		
500 horses = Large CAFO	ALL	1000	
2,500 swine each weighing over 55 pounds, or 10,000 swine weighing less than 55 pounds = Large CAFO	NURSERY PIG	25	
	GROW-FINISH	150	
	GESTATING	275	
	LACTATING	375	
	BOAR	350	
	OTHER		
10,000 sheep or lambs	ALL	100	

OTHER LIVESTOCK TYPE:	OTHER LIVESTOCK QUANTITY:
OTHER LIVESTOCK TYPE:	OTHER LIVESTOCK QUANTITY:

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 10:18 – 1,400 – HJ/BP