

2023

# AGRICULTURAL ENVIRONMENTAL MANAGEMENT NUTRIENT APPLICATION

AGRICULTURAL ENVIRONMENTAL MANAGEMENT



Ministry of  
Environment and  
Climate Change Strategy

## Introduction

Under the Code of Practice for Agricultural Environmental Management (code of practice), spreading of manure and other nutrient sources to land in high-precipitation areas is restricted at certain times. In 2020, the B.C. Dairy Association raised concerns that compliance was only carried out when complaints were received; therefore, not getting a full compliance picture of the agricultural sector. Many of the complaints received were due to improper nutrient application during the no spreading and risk assessment periods. The decision was made to conduct a nutrient management compliance audit to ensure an objective compliance assessment of nutrient application.

There were two goals of this audit:

1. Assess compliance of nutrient application and management during the prohibited application and risk assessment periods in the Fraser Valley for all agricultural operations.
2. Promote voluntary compliance and increase awareness of the new nutrient management planning requirements with the code of practice.

## Regulatory Oversight

The sections of the code of practice that were examined in this audit were:

Section 27(1): Nutrient sources must not be applied between November 1 and February 1.

Section 27(2) & (4): Nutrient sources can only be applied in February, March or October if a risk assessment using the BC Application Risk Management (ARM) tool or other format required by a director has been prepared. Wood residue is exempt.

## Audit Preparation and Execution

In fall 2022, all Fraser Valley agricultural associations were sent an email:

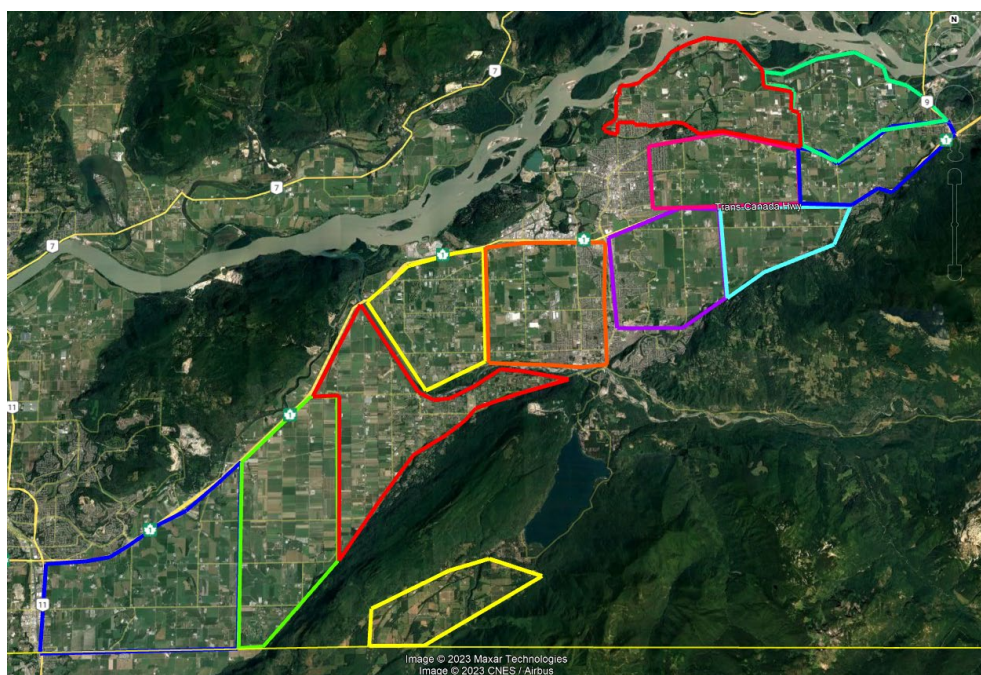
- notifying them of the upcoming audit;
- asking them to let their members know; and,
- providing them with the electronic postcard (appendix 2) and brochure (appendix 1).

Postcards and brochures were distributed to farmers by inspectors when they conducted agricultural inspections months in advance of the audit.

To conduct the audit, inspectors drove the roads in the project area (figure 1). When it looked like nutrients were being applied on a farm, inspectors stopped and conducted an on-site inspection. Those found to be spreading nutrients were provided informational material; some were given an advisory.

## Sites Inspected

The project area was broken into 12 polygons (figure 1) and inspectors were assigned a section each day. The 241.5 km<sup>2</sup> inspection area was bordered by highway 11 to the west, highway 9 to the east, highway 1 to the north and the Canada-U.S. border to the south.



(Figure 1. Inspection area and polygons)

## Results

During the inspection period, all farms in the inspection area were observed. It is estimated that 225 farms were observed. Non-compliant nutrient spreading was observed during both the prohibited and risk assessment period.

Number of times manure spreading was observed:

|   |    |
|---|----|
| January 24, 30, 31 (prohibited period)    | 3  |
| March 28, 29, 30 (risk assessment period) | 12 |

## Discussion

Inspectors successfully observed the entire audit area and spoke with those farmers willing to talk.

Summary of inspectors' observations:

- Inspectors felt most farmers were aware of the requirements of the code of practice or rules around nutrient application.
- There were a range of responses around the ARM tool. Some very aware of tool and using it, some aware and not using it, and some to not aware at all and required a demonstration of how the tool worked.
- Some farmers were able to provide the risk assessment right away, some were able to provide on a subsequent day (which is within the requirements of providing within 5 days).
- Farmers were uncertain of the consequences of not using it (compliance responses).
- Some farmers were unwilling to speak to inspectors and drove away when approached.

## Recommendations

Based on the results of the AEMCOP audit, it is recommended that there be increased education and outreach around:

- using the ARM tool to identify risk of nutrient management in the agricultural sector
- compliance and environmental consequences of not adhering to nutrient management requirements in the AEMCOP

## Appendix 1- AEM Code Nutrient Management and Application Requirements Brochure

### 10 Things To Do Before You Spread Nutrients

Nutrient Management and Application Requirements of the Code of Practice for Agricultural Environmental Management (AEM Code)



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### 10 Things to Do Before You Apply Nutrients:

1. Use required nutrient spreading setbacks.
2. Follow general nutrient spreading requirements.
3. Take post-harvest soil tests.
4. Keep records related to nutrient storage & application.
5. Find out if your farm is located in a high precipitation area.
6. Follow specific manure spreading & storage requirements if your farm is in a high-precipitation area.
7. Complete a risk assessment before spreading manure in October, February and March if located in high precipitation areas.
8. Identify if your farm is located in a vulnerable aquifer recharge area or phosphorous affected area.
9. Check the Nutrient Management Implementation Schedule for your farm location.
10. Ensure your nutrient management plan is complete.

*Note: Nutrients referred to in this booklet are any sources of nitrogen and phosphorus.*

#### 1. Use required nutrient spreading setbacks

There are setbacks required when applying fertilizer and other nutrients, including manure, near watercourses and drinking water sources. The following table shows the AEM Code setbacks for nutrient application:

| Setbacks for Nutrient Application |          |  |
|-----------------------------------|----------|--|
| Location                          | Distance | Details  |
| Drinking water source             | 30m      | Well or diversion point                                |
|                                   | 3m       | Any other case or if commercial fertilizer is used     |
| Watercourse                       | 1.5m     | If using commercial fertilizer or subsurface injection |
|                                   | 3m       | In any other case                                      |
| Property boundary                 | >0m      | Not on the property boundary                           |



#### 2. Follow general nutrient spreading requirements

Nutrients must be applied in a way that prevents:

- Leachate from escape during transport or piping.
- Nutrient spray from entering a watercourse, water table or cross a property boundary.

**leachate** = water that has come in contact with agricultural by-products like wood residue, manure, compost, mortalities or other organic matter.

The amount of nitrogen applied should not exceed the amount needed for optimum crop growth and yield. Post-harvest nitrate soil tests help to inform this.

#### Never:

- a) Discharge nutrients to a watercourse, below the water table or across a property boundary.
- b) Apply nutrients to land:
  - With standing water;
  - With snow or ice;
  - Where ground is frozen; or
  - In a way that would cause run-off.

#### Always:

- a) Monitor for potential high-risk conditions.
- b) Make sure you're preventing contaminated runoff, leachate and solids from entering water or crossing a property boundary.
- c) Maintain run-off controls before high-risk conditions occur.

#### High-Risk Conditions

- Strong, divergent winds
- Storm events
- Periods of intense rainfall
- High water tables or flooding
- Fields sloped towards watercourse

### 3. Take post-harvest nitrate and phosphorus soil tests

If you apply manure or fertilizers containing nitrogen, or phosphorus you must:

- Have soil tests for your fields from within the last 3 years to help inform nutrient application rates.
- Nitrate soil samples must be taken after last harvest and before fall rains typically begin.

With the new code, farmers must take nitrate and phosphorus soil samples every 3 years, and keep records of the test results.

Fields exceeding 100kg/ha of nitrate must be tested again the following year.

You can convert the ppm nitrate results on a soil test to kg/ha with the converter found here:

[nmp.apps.nrs.gov.bc.ca/MiniApps/NitrateTestCalculator](http://nmp.apps.nrs.gov.bc.ca/MiniApps/NitrateTestCalculator)

More information on when and how to sample can be found here:

[gov.bc.ca/NutrientManagement](http://gov.bc.ca/NutrientManagement)



#### What's in it for you?

Knowing how much nitrogen is in your soil after you harvest can tell you if you can reduce the amount of fertilizer applied – saving you money!

### 4. Keep records related to nutrient storage & application

Records required related to nutrient management & application are:

- Animal type & numbers.
- Amount & type of manure generated annually on farm, including bedding mixed with manure.
- How much manure is used on farm & any amounts sent to other locations.
- Ongoing records detailing the use of fertilizers containing N and P, manure and all other nutrient sources, including compost, soil and digestate. Specifically, farmers need to record:
  - Location and size of fields.
  - Each crop's nutrient requirements.
  - Field crop yields.
  - Soil test results.
  - Calculated nutrient application rate.
  - Date & location of each application of nutrients.
- Actual rate nutrients were applied.
- If the nutrient sources were solids or liquids & the type of nutrient sources applied.
- If the nutrient source was wastewater or the product of composting of mortalities & processing waste, and if the material contained specified risk material.
- Records for application of nutrients other than to land (i.e., crops grown in containers):
  - Crop nutrient requirements.
  - Calculated nutrient application rate.
  - Solids or liquids & type of nutrient sources applied.
  - Results of alternative test to soil tests such as tissue tests.



**Note:** Other records under AEM Code are also required for other agricultural activities.

Nutrient storage and application records must be kept on-farm for at least 5 years and may be requested by provincial environmental protection staff during inspection. If asked, you need to be able to show your records within 5 days of a request.

The BC Nutrient Management Calculator can be used to assess crop nutrient requirements, determine application rates and produce record keeping sheets. The tool can be found here: [bcnmp.ca](http://bcnmp.ca)

If a nutrient management plan is required (see section 9), then a copy must also be kept.

Records can be many things:

- Bills of sale
- Fertilizer labels
- Notes
- Sample results
- Spreadsheets
- Photographs



Specific forms or templates are not required. However, keeping the records for a specific activity together is recommended. For example, a notebook could be used with a separate section for each set of information.

A complete list of activities requiring records are available on the Agricultural Environmental Management website:  
[www2.gov.bc.ca/Agricultural-Environmental-Management](http://www2.gov.bc.ca/Agricultural-Environmental-Management)

Information on record keeping:  
[www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture/regulation-requirements/record-keeping](http://www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture/regulation-requirements/record-keeping)

### 5. Find out if your farm is located in a high precipitation area

High precipitation areas are defined as areas receiving over 600mm of rainfall between October 1<sup>st</sup> and April 1<sup>st</sup>. You can check if your farm is in one of these areas on the map below or by entering "BC high risk agricultural areas map" in your internet search engine.



## 7. Complete a risk assessment before spreading manure in October, February and March if located in high precipitation areas

How to complete a risk assessment:

1. Check the short-term weather forecast for precipitation.
2. Assess field conditions (crop cover, soil moisture, proximity to water courses, setbacks).
3. Document/record and take appropriate steps.

The BC Application Risk Management (ARM) tool is available online to help producers complete a risk assessment, including a step-by-step user guide. Farmers located within high precipitation areas can find the tool here: <https://agri-nmp-msa.apps.silver.devops.gov.bc.ca/>

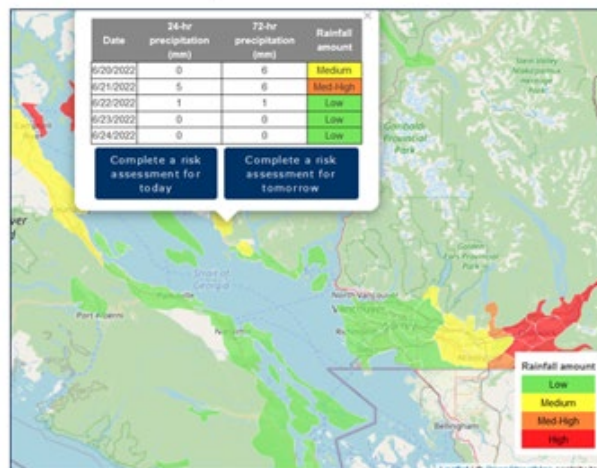
Important notes on the ARM tool:

- If you are located in a high-precipitation area, you are now required to use the ARM tool prior to spreading manure (recommended within 24 hours of spreading). The online tool will take you through a few steps before generating a simple report to advise you whether spreading is needed.
- Print or save the report generated on the last page for your records
- If the tool advises against spreading in the October, February and March shoulder season (given weather conditions), farmers are expected to abide by that decision.

As of October 2022, the BC ARM tool must show a "Low" rating prior to nutrient application during October, February and March in high precipitation areas.

## Risk Assessment Management Tool

Only spread manure in October, February or March if your risk assessment is low.



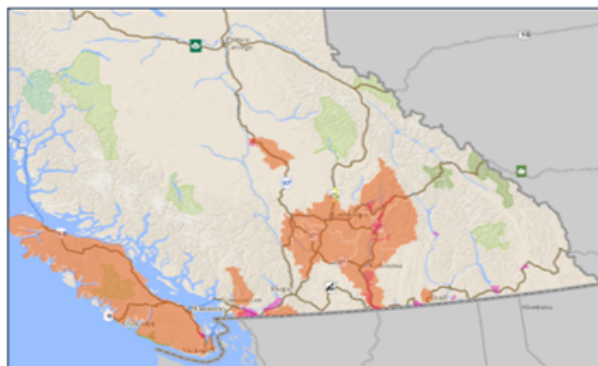
## 8. Identify if your farm is located in a vulnerable aquifer recharge area or phosphorous affected area

Because code requirements can be different based on region, you will need to look up whether your farm is located within a vulnerable aquifer recharge area, phosphorus-affected area or high-precipitation area.

### Vulnerable aquifer recharge area/phosphorus-affected area maps:

Check if you are in a vulnerable aquifer recharge area and/or phosphorus-affected area by using provincial interactive maps. These maps can be found by entering "BC high risk agricultural areas map" in your internet search engine.

**Note:** There are tabs along the top of this map for time dependant requirements. If your farm falls within a vulnerable aquifer recharge area on any of these tabs, make a note of the year as you may be required to have a nutrient management plan prepared by a certain time if your farm meets specific criteria (see p.11).



## 9. Check the Nutrient Management Plan Implementation Schedule for your farm location

| Nutrient Management Plan Implementation Schedule |                                 |  |  |                            |
|--|---------------------------------|--|--|----------------------------|
| Requirement for NMP effective on                 | Growing season to implement NMP | High-Risk Area   | Type of Operation  | Soil Test Result Threshold |
| Feb. 28, 2019                                    | Spring 2020 onward              | Vulnerable aquifer recharge area (Map B1)                              | All agricultural operations ≥ 5 ha   | ≥ 100 kg N/ha              |
| July 15, 2020                                    | Spring 2021 onward              | Vulnerable aquifer recharge areas (Map B1, adding Map B2):             | Livestock & poultry operations ≥ 5 ha with five animal units (AU)* or more | ≥ 100 kg N/ha              |
| July 15, 2021                                    | Spring 2022 onward              | Vulnerable aquifer recharge areas (Maps B1, B2, adding Map B3):        | Livestock & poultry operations ≥ 5 ha with 5 AU or more                    | ≥ 100 kg N/ha              |
| July 15, 2023                                    | Spring 2024 onward              | All vulnerable aquifer recharge areas (Maps B1, B2, B3 adding Map B4): | Livestock & poultry operations ≥ 5 ha with any number of AUs               | ≥ 100 kg N/ha              |
|  |                                 |  | Non-livestock & non-poultry operations (horticultural operations) ≥ 30 ha  | ≥ 100 kg N/ha              |
| July 15, 2024                                    | Spring 2025 onward              | All vulnerable aquifer recharge areas (Maps B1 - B4)                   | All agricultural operations ≥ 5 ha   | ≥ 100 kg N/ha              |
|  |                                 | All Phosphorus-affected areas (Maps A1 - A3)                           | All agricultural operations ≥ 5 ha   | ≥ 200 ppm P                |
| July 15, 2026                                    | Spring 2027 onward              | All phosphorus-affected areas with a lowered threshold                 |  | ≥ 100 ppm P                |

\* one animal unit (AU) equals 455 kg livestock or poultry; five AUs are equal to 2,275 kg of livestock or poultry or any combination of livestock and poultry that equals to 2,275 kg.

#### 10. Ensure your nutrient management plan includes:

1. Farm maps and description, including:
  - a. Total number of acres of cropland;
  - b. Whether the farm is located in a high risk area;
  - c. Type of animals on the farm;
  - d. Handling and storage of manure;
  - e. Map with location of manure storage and animal housing in relation to water resources;
  - f. Field maps identifying each field and their relation to environmental risk; and,
  - g. Field information on spreadable area, soil characteristics and crop history.
2. Nutrient source inventory and use, including:
  - a. Estimated annual amounts of manure generated and kept on farm;
  - b. Amounts of nutrient sources imported to the farm;
  - c. Where nutrient sources are generated on the farm; and,
  - d. Comparison between amount of manure generated and amount recommended to be applied to land.



3. Field specific nutrient source application rates, including recommended application rates, timing and sources of nutrients.
4. Recommendations should address any issues identified with manure storage, handling or application. For farms that have an imbalance between the use and generation of nutrients, then guidance on where excesses will go.
5. Results of soil tests and material analysis should also be included in the plan.

Nutrient management plans are good for up to five years, unless there is a significant change to the farm within that time period.

The purpose of the nutrient management plan is to manage nutrients at both the field and farm level, so that no excess nutrients are being used, overall manure is balanced to prevent emergency applications in the rainy season and so that compliance with the AEM Code is met.

#### Who can prepare a plan?

If your result from a nitrate test is 150kg/ha or more, then a qualified professional who has completed the approved nutrient management planning course.

If your result from your nitrate test is less than 150kg/ha, then a person with at least 4 years experience in agricultural operations and who has completed the approved nutrient management planning.

Find more information by entering "bc agriculture nutrient management plan" in your internet search engine

#### Find information on nutrient management plans here:

[www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/soil-nutrients/nutrient-management/nutrient-management-plans](http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/soil-nutrients/nutrient-management/nutrient-management-plans)

#### Find a qualified planner here:

[www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/soil-nutrients/nutrient-management/nutrient-management-plans/find-a-nutrient-management-planner](http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/soil-nutrients/nutrient-management/nutrient-management-plans/find-a-nutrient-management-planner)



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## Appendix 2- Audit Notification Postcard



### More Information on:

#### What to expect during an inspection

[www2.gov.bc.ca/gov/content/environment/  
natural-resource-stewardship/natural-  
resource-law-enforcement/  
environmental-compliance](http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/natural-resource-law-enforcement/environmental-compliance)

#### The Agricultural Environmental Management Code of Practice

[www2.gov.bc.ca/gov/content/environment/  
waste-management/industrial-  
waste/agriculture/regulation-requirements](http://www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/agriculture/regulation-requirements)

Address: