



# CITY OF WINNIPEG BIOSOLIDS LAND APPLICATION PROGRAM



PUBLIC OPEN HOUSE

- » Biosolids are a nutrient rich, solid by-product of municipal wastewater treatment. The City of Winnipeg (the 'City') produces approximately 50,000 wet tonnes (WT) of biosolids per year.
- » Biosolids land application is the practice of applying biosolids to soil to supply nutrients and improve soil quality.
- » From 1990 to 2010, the City of Winnipeg applied biosolids to farmland under the WinGRO program. The WinGRO program ended due to changes to provincial regulations. Since 2011, the biosolids have been disposed at the Brady Road Resource Management Facility (landfill).
- » In 2014, the City completed a Biosolids Master Plan. It recommended that the City develop strategies to reuse the biosolids, including: composting, soil fabrication and land application.



**2017****2018****2019****2020****PHASE 1: Public Engagement and Environment Act Proposal**

Capital Regional Workshop  
Municipal Meetings  
• Public Open Houses  
Producer Engagement  
Develop Database  
Environment Act Proposal

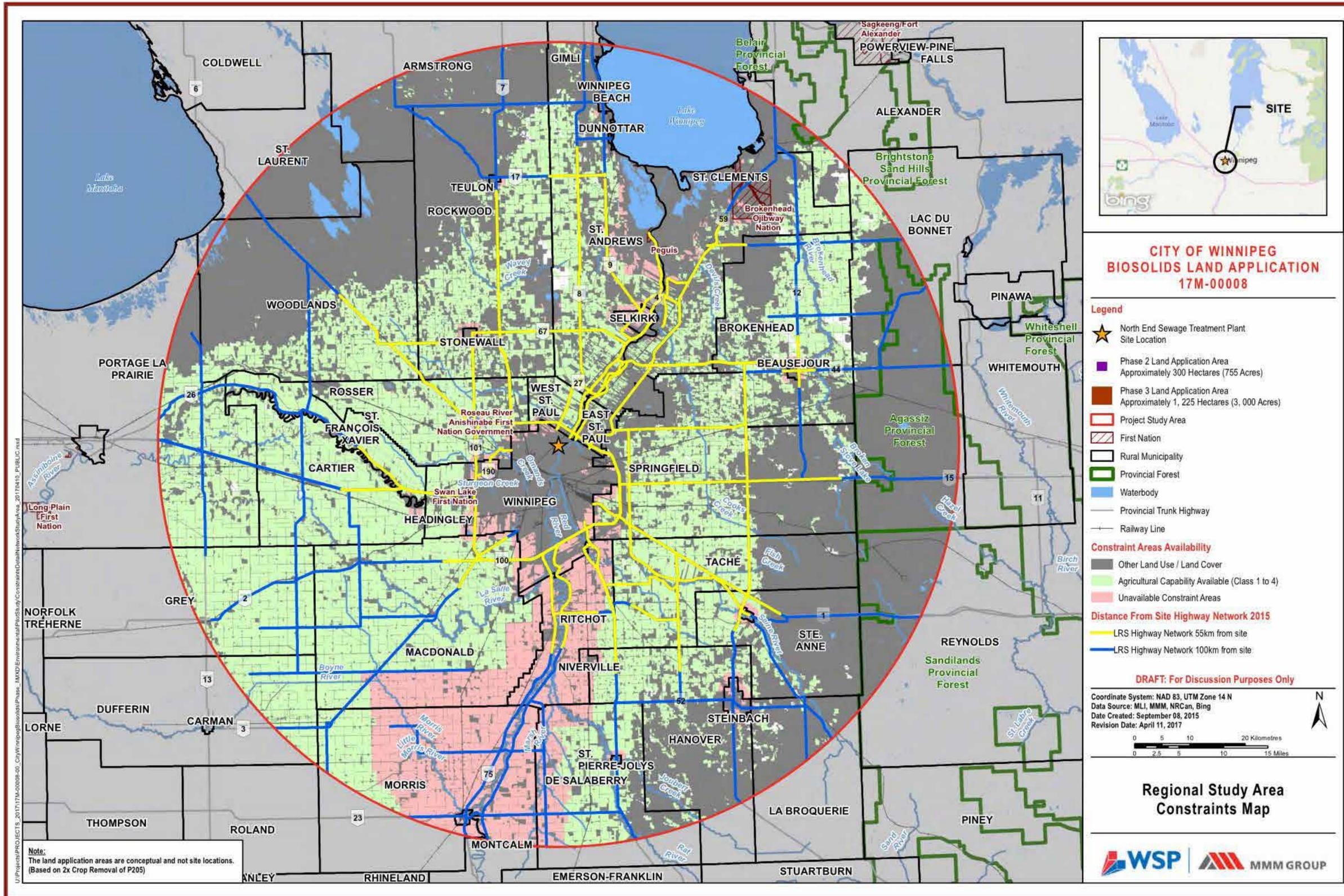
**JANUARY - OCTOBER 2017****WE  
ARE  
HERE****PHASE 2: Pilot Land Application**

Province approves pilot application  
5,000 WT pilot application  
Monitoring and reporting

**AUGUST - DECEMBER 2017****PHASE 3: Full Land Application**

Province issues Environment Act Licence  
20,000 WT application annually  
Monitoring and reporting

**2018, 2019, 2020**

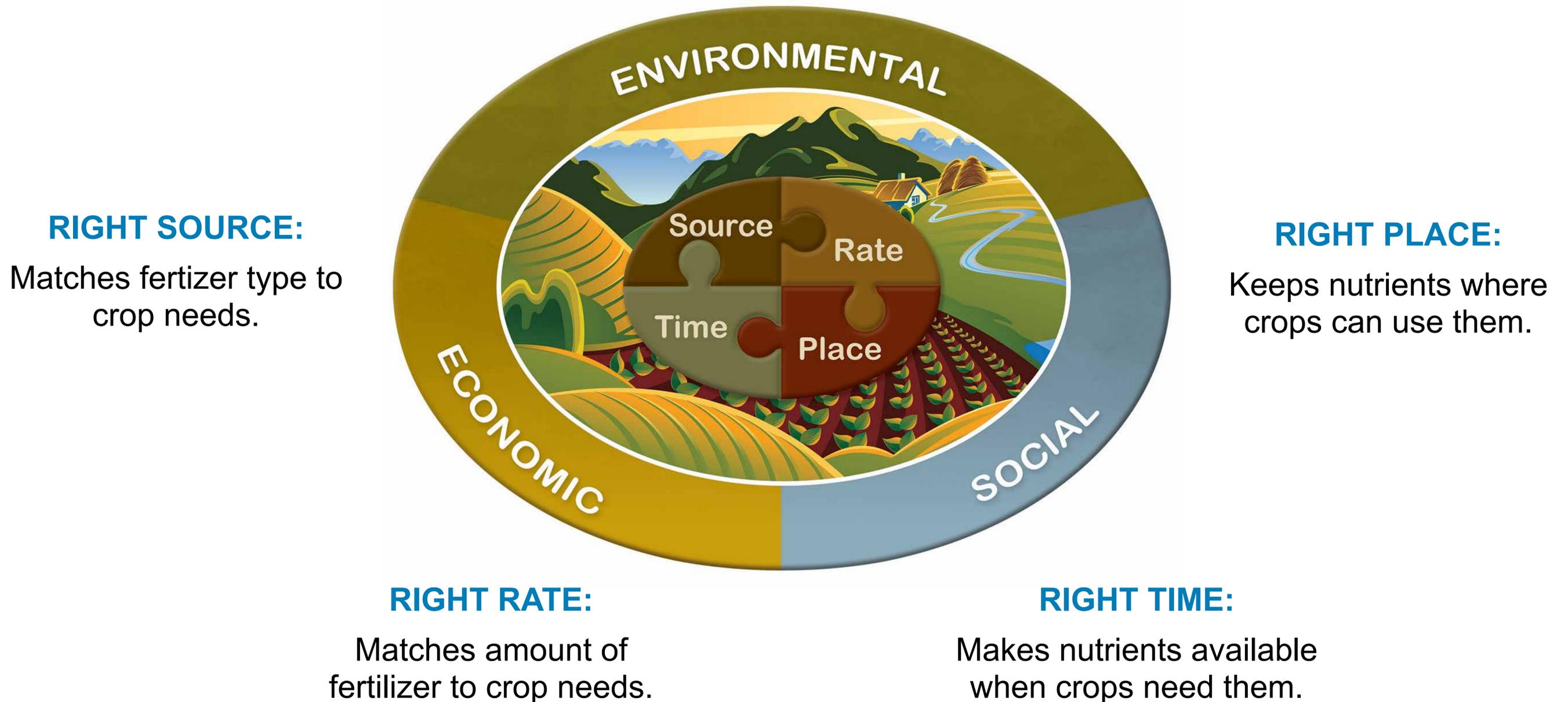


- » Areas in **pink** are lands that are not available for biosolids land application because of known constraints (i.e., flood zone).
- » Areas in **grey** are lands that are limited for biosolids land application because of land use and land cover (i.e. forest, non-agricultural land use).
- » Areas in **green** are lands that are suitable for biosolids land application as they have been identified as land with the appropriate agricultural capability or nutrient management zone and identified as annually cropped.

- » Provides much needed nutrients to local farmland.
- » Provides organic matter to farmland that improves soil structure, drainage and erosion protection.
- » Reduces greenhouse gases through carbon sequestration.
- » Eliminates disposal of biosolids in the landfill.
- » Reduces fertilizer costs for farm producers.
- » Improves crop yields for farm producers.



- » The program will comply with all applicable regulations, including the Manitoba *Water Protection Act*, the Manitoba *Environment Act* and the *Nutrient Management Regulation*.
- » The program will follow the principles of 4R Nutrient Stewardship



## SPRING - SUMMER:

Biosolids are trucked from the North End Sewage Treatment Plant to local storage sites.



The soil will be monitored for 3 years following application. Biosolids land application is planned to return to the same fields every three to four years.



## FALL - WINTER:

Report back to the regulator and farm producer providing an update on the program and application rates.



## FALL - POST HARVEST:

Soil sampling occurs to determine the nitrogen, phosphorus, and metal levels. A Professional Agrologist calculates the biosolids application rate taking into consideration the farm producer's target yield for the following harvest.



## FALL - POST HARVEST:

Biosolids are then applied at the prescribed rate and tilled into the soil.



- » The approach to field storage will be determined in the coming months.
- » Field storage of biosolids will follow the existing regulations for manure management, and the guidelines outlined by the Canadian Council of Ministers of the Environment and U.S. Environmental Protection Agency for biosolids storage.
- » Considerations for field storage include:
  - Site selection, including setback distances from water bodies, wells and residential areas
  - Odour and vector management
  - Storm water management
  - Timing of storage
  - Site security
  - Site restoration
  - Good neighbour practices

## Human Health Concerns

### **PATHOGENS**

Biosolids contain pathogens such as bacteria

### **EMERGING SUBSTANCES OF CONCERN**

Biosolids may contain trace amounts of pharmaceuticals, personal care products, industrial contaminants, etc.

## Mitigation Measures

- Reduction through sludge treatment at the sewage treatment plant
- Reduction from climate exposure
- Reduction by natural soil microorganisms
- Reduced exposure from tillage and setback distances
- Crop restrictions for three years following application
- Separation in time from land application to harvest
- Cropping rotation

- Degradation from climate exposure
- Degradation from microorganisms
- Degradation from sunlight
- Setback distances from water bodies and residential areas
- Crop restrictions for three years following application
- Separation in time from land application to harvest
- Monitoring the ongoing scientific research on effects and mitigation measures

## Environmental Concerns

### **SURFACE AND GROUNDWATER PROTECTION**

Biosolids can impact water quality if regulations are not followed

### **METAL LOADING**

Biosolids contain metals in small concentrations

## Mitigation Measures

- Setback distances from water bodies, wetlands and groundwater features
  - A minimum of 1.5 metre depth of clay between the surface and water table
  - No application on lands subject to flooding
  - Application rates based on the farm producer agronomy
  - Consideration of the crop system, landscape features and soil conditions
  - Regulated by the *Manitoba Water Protection Act* and the *Environment Act Licence*
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- The City's sewer by-law limits metals entering the sewer system
  - Biosolids monitoring for metal concentrations
  - Soil monitoring for metal concentrations
  - Plant uptake and removal
  - Regulated by the *Environment Act Licence* and the Canadian Council of Ministers of the Environment Guidelines

## Nuisance Concerns

### **ODOUR**

Biosolids have an odour

### **DUST AND TRAFFIC IMPACTS**

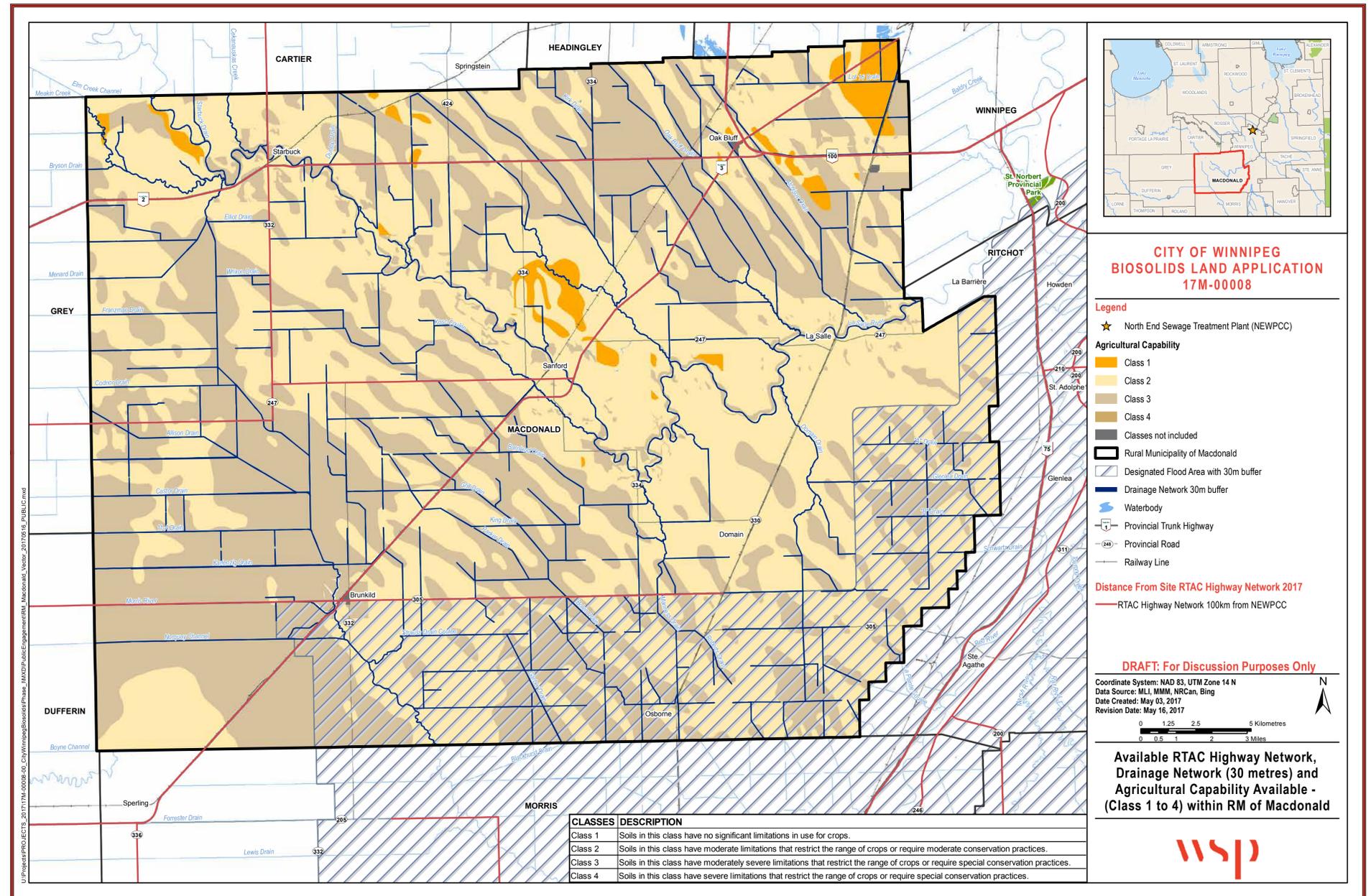
Biosolids will be transported from the City's North End Sewage Treatment Plant to the storage site(s)

## Mitigation Measures

- Site selection for field storage and application sites
- Setback distances from residential areas
- Immediate tillage and incorporation after land application
- Storage cover

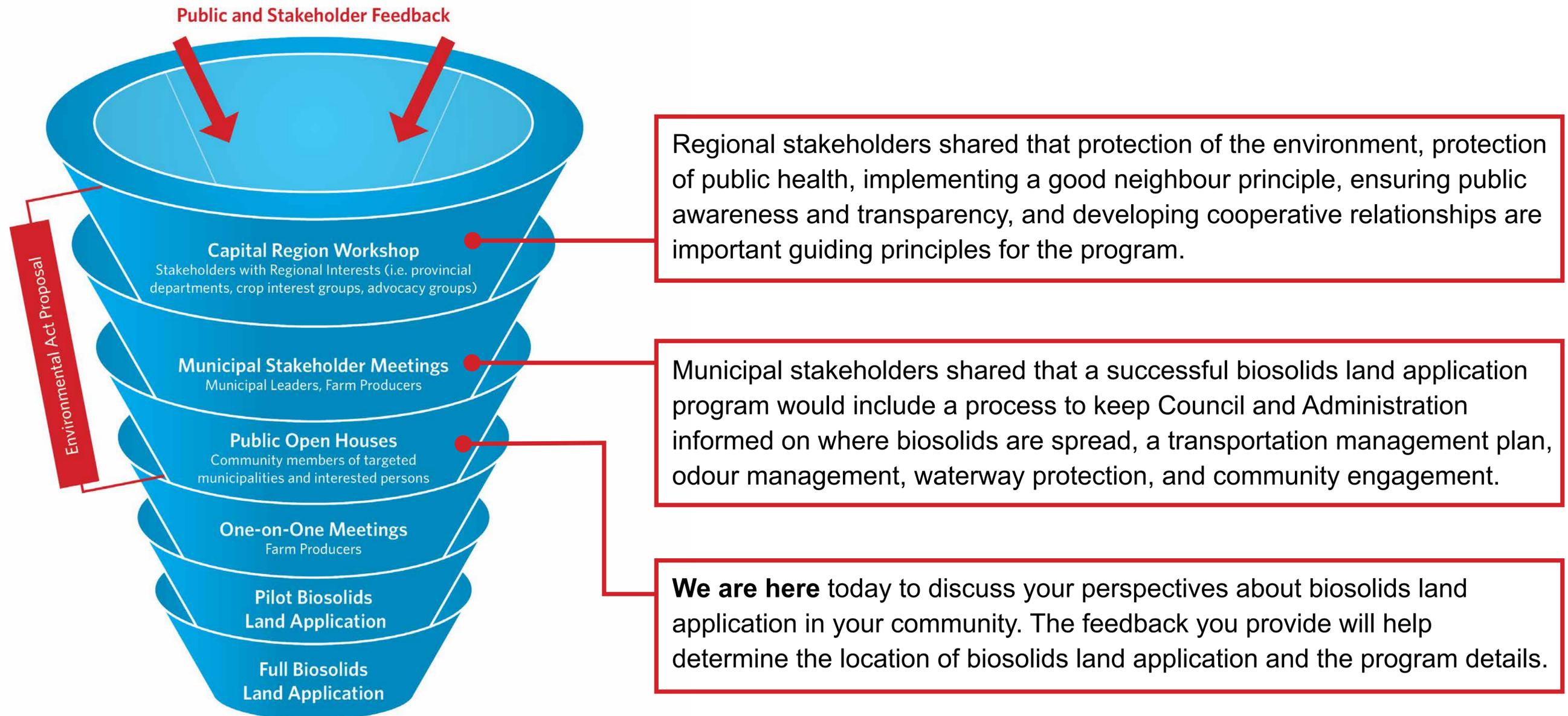
- Develop a truck traffic management plan
- Dust control measures
- Road repairs as required

- » Land availability, land suitability and agricultural characteristics influence the location that biosolids may be applied.
- » Lands suitable for biosolids application are identified as having an Agricultural Capability Class 1 to 4, or a Nutrient Management Zone of N1 and N2 and identified as annually cropped.



Example of suitable land for biosolids land application in the R.M. of Macdonald

- » Engaging stakeholders, landowners, community members, and interested persons is an integral part of our process to develop a successful program.



**PUBLIC ENGAGEMENT PROCESS**

- » Work with farm producers to select application sites
- » Finalize the approach for field storage of biosolids
- » Apply for an Environment Act Licence
- » Conduct a pilot project to apply 5,000 wet tonnes (WT) of biosolids to farmland

Thank you for attending today's open house

Please submit your exit survey before you leave

For more information, please visit: [winnipeg.ca/BiosolidsLandApplication](http://winnipeg.ca/BiosolidsLandApplication)

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