

# Update on Septage Management

**Ontario Association of Sewage Industry Services**

**October 25, 2008**

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Ontario Ministry of the Environment**

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**Ontario**

# OUTLINE

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- Septage management
- Septage guides - summary
- Septage survey
- Technology evaluation studies - summary
- Update on the General Nutrient Management Regulation

# MANAGEMENT OF SEPTAGE

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- In order to successfully end the practice of spreading untreated septage, there must be sufficient capacity to treat septage at municipal sewage treatment plants or with alternative viable treatment options.
- The ministry is working closely with stakeholders to develop treatment standards and new technologies to manage septage in Ontario.
- There is a role for provincial and municipal government, the private sector and the public to play in finding solutions, which includes the development of partnerships.

# SEPTAGE TREATMENT GUIDES

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- Science-based standards are essential to those who want to develop effective septage treatment.
- The ministry has worked to develop draft septage guides, which outline standards for the treatment of septage including:
  - Land Application
  - Alkaline Stabilization
  - Dewatering Trenches
- These draft guides were recently posted on the Environmental Registry for comment.

# LAND APPLICATION

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- The guide for land application of treated domestic septage considers several treatment processes, (e.g., alkaline stabilization, composting, geotubes, anaerobic digestion) with a goal to set out standards for safe use of treated septage on agricultural land.
- The guide was developed using results of analysis of approximately 400 samples of Ontario septage.
- Draft standards include:
  - Maximum application rates,
  - metals concentrations,
  - pathogen criteria and
  - screening.
- Industrial and commercial septage are more variable than domestic septage so are not included in the guide.

# ALKALINE STABILIZATION

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- Alkaline stabilization is the addition of alkali (lime) to septage, which kills pathogens and reduces odour.
- The process is relatively easy, and can be done in-truck or on-site.
- Draft standards include:
  - o Types of alkali, duration of treatment, pH measurement, monitoring
  - o Screening
  - o Reporting requirements
  - o Application rate
- In 2005, a pilot study with University of Guelph and septage haulers was undertaken and was found to be a feasible treatment option for septage haulers.

# DEWATERING TRENCHES

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- Dewatering trenches are long narrow trenches excavated in permeable soils – prior to final disposal.
- They are mainly used in Northern Ontario where treatment, pre-treatment or other disposal methods are not readily available.
- The primary purpose is to reduce septage volume by controlled exfiltration.
- Draft standards include:
  - o Location
  - o Operation
  - o Types of septage that can be managed

# SEPTAGE TREATMENT GUIDES

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The draft Septage Treatment Guides were posted on the Environmental Registry for public comment until October 23, 2008. The guides can still be viewed.

**Website:**

[www.ontario.ca/environmentalregistry](http://www.ontario.ca/environmentalregistry) EBR Registry #: 010-0366

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# PROVINCIAL POLICY STATEMENT, 2005

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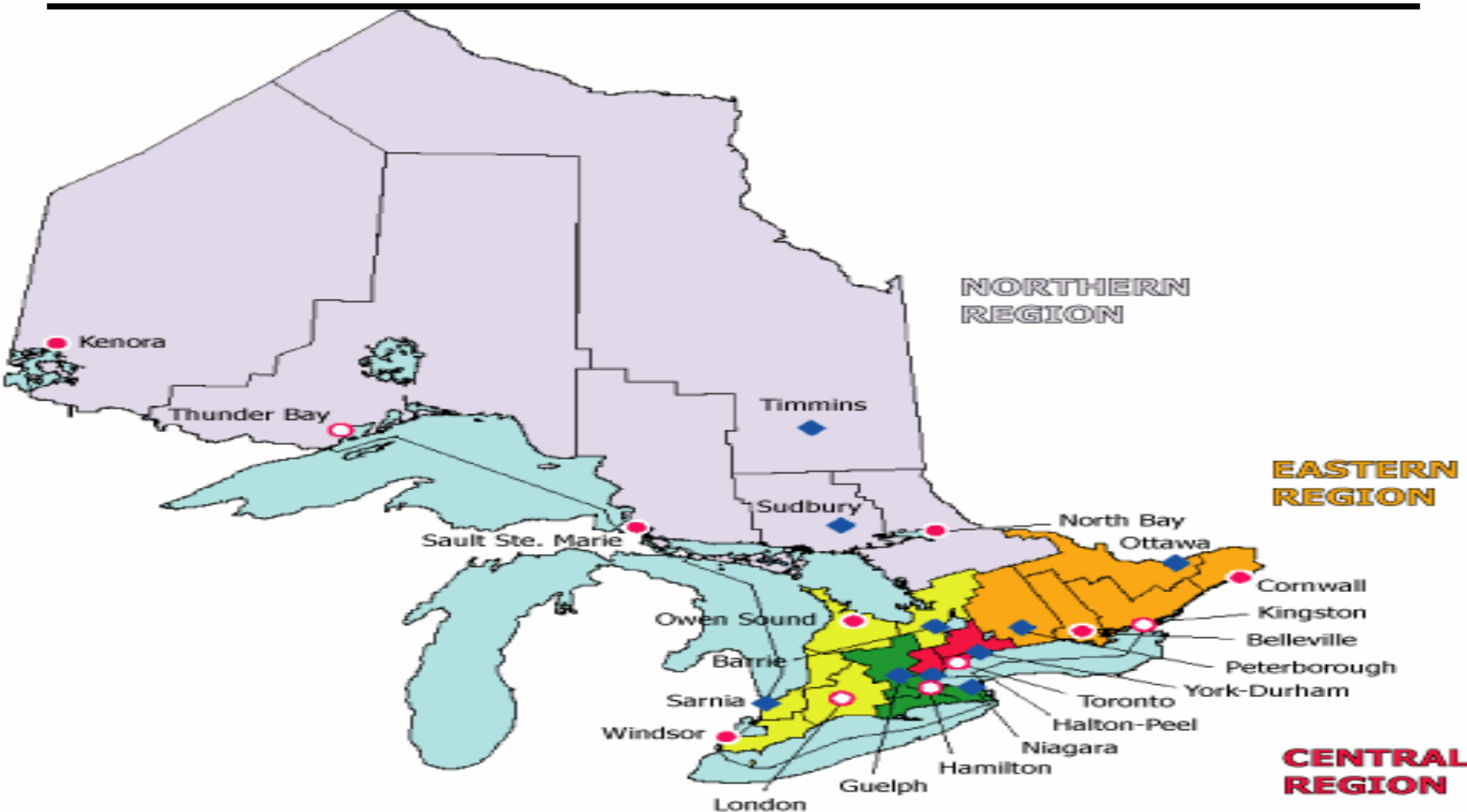
- States that lot creation on private communal or individual septage services is only permitted if there is confirmation of *reserve sewage system capacity*.
- Reserve sewage system capacity is sufficient if the septage from the development can be treated or disposed of at sites approved under the *Environmental Protection Act* or the *Ontario Water Resources Act*.
- There is a need to have capacity for the septage by the time the development is completed. Capacity does not include management by land-applying untreated septage.
- Training for planners included in Ministry of Municipal Affairs and Housing One Window Training, completed in March 2008

# MOE SURVEY

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- In 2007, MOE conducted a survey of Ontario haulers and sewage treatment plants to to gain a better understanding of what was happening with septage in the province.
- Questions for haulers asked where they took their septage, and how much they manage.
- Sewage treatment plants were asked whether they accepted septage, and if there were future plans to accept septage.
- Staff are continuing to analyze results, and gather additional information.

# MOE REGIONS



## OFFICES

- Regional & District
- ◆ District
- Area

**SOUTHWESTERN REGION**

**WEST CENTRAL REGION**

# MOE SURVEY

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## **Haulers: 28% responded**

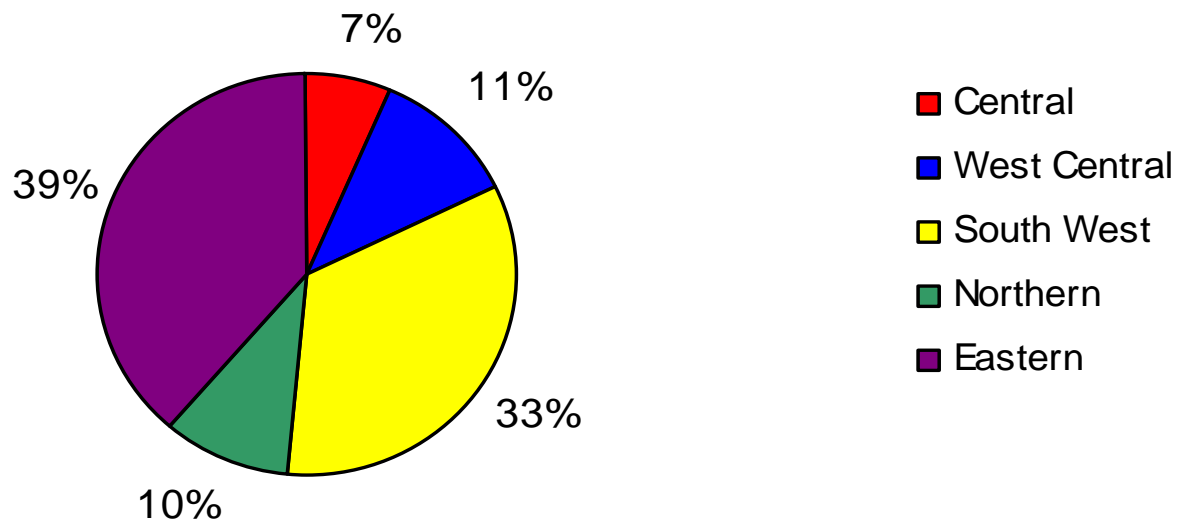
- 54% said they use an STP to dispose of septage at least some of the time; 44% of haulers exclusively use STPs to dispose of septage.
- 36% said they land apply septage –17% exclusively use land application.

## **Sewage Treatment Plants (STPs): 53% responded**

- 33% of the plants accept septage at least some of the time.
- Almost half of STPs in west central Ontario and south west Ontario stated they accept septage while 22% of STPs in eastern Ontario and 17% in northern Ontario stated they accept septage.
- 10 more STPs plan to accept septage in the next 3 years (7 in eastern region) and 2 others are investigating the possibility.

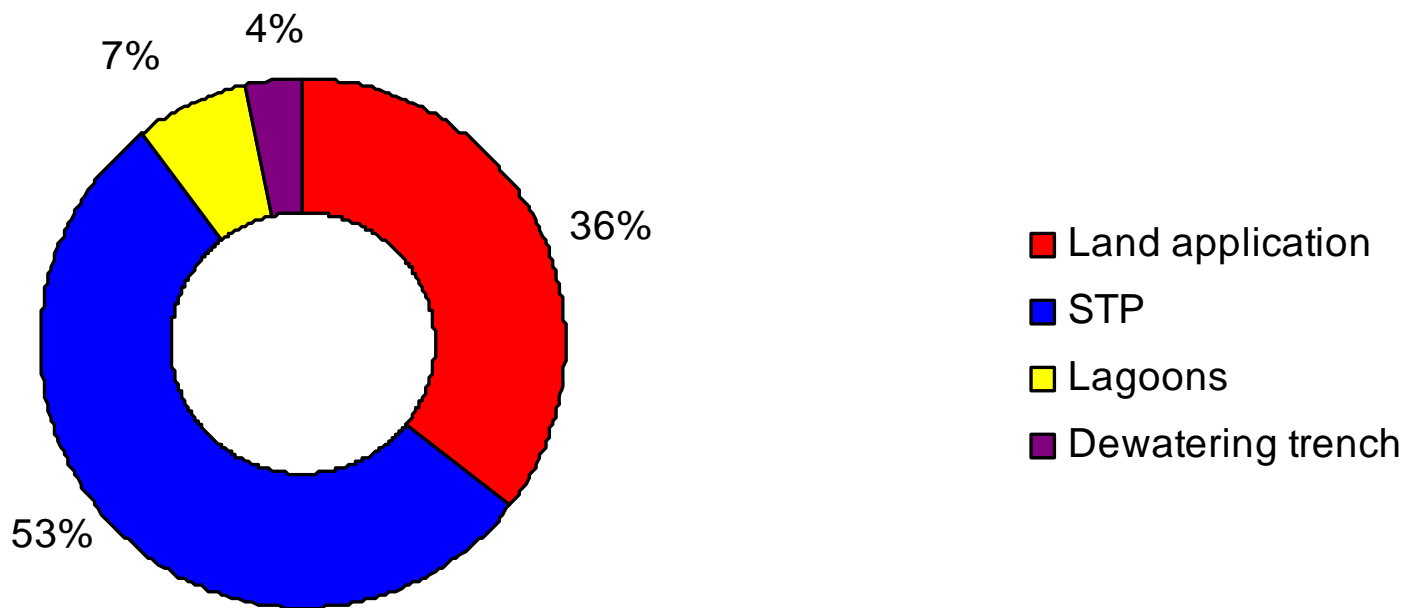
# MOE SURVEY

## Septage Generation in the Province



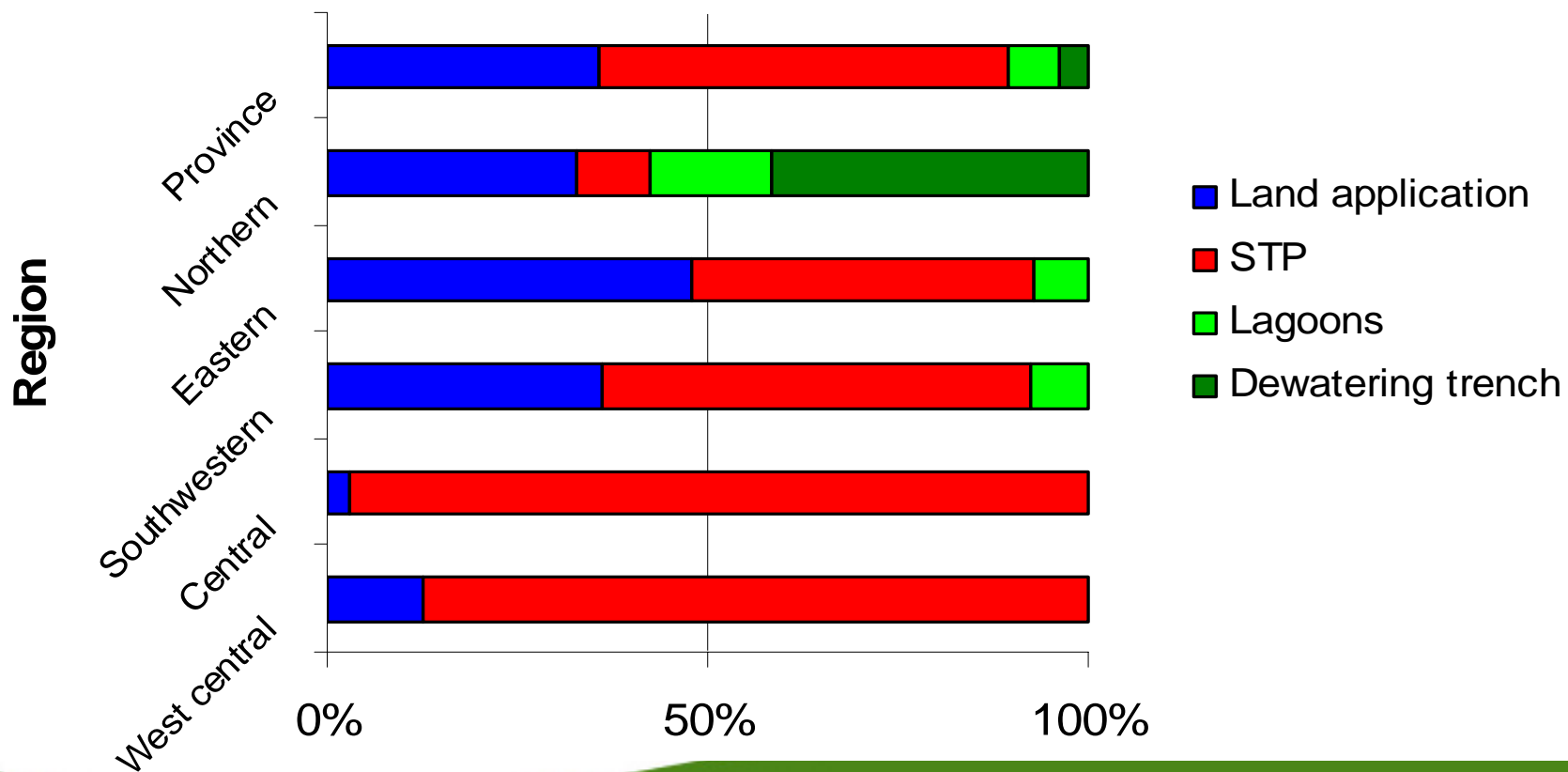
# MOE SURVEY

## Disposal Method - by volume



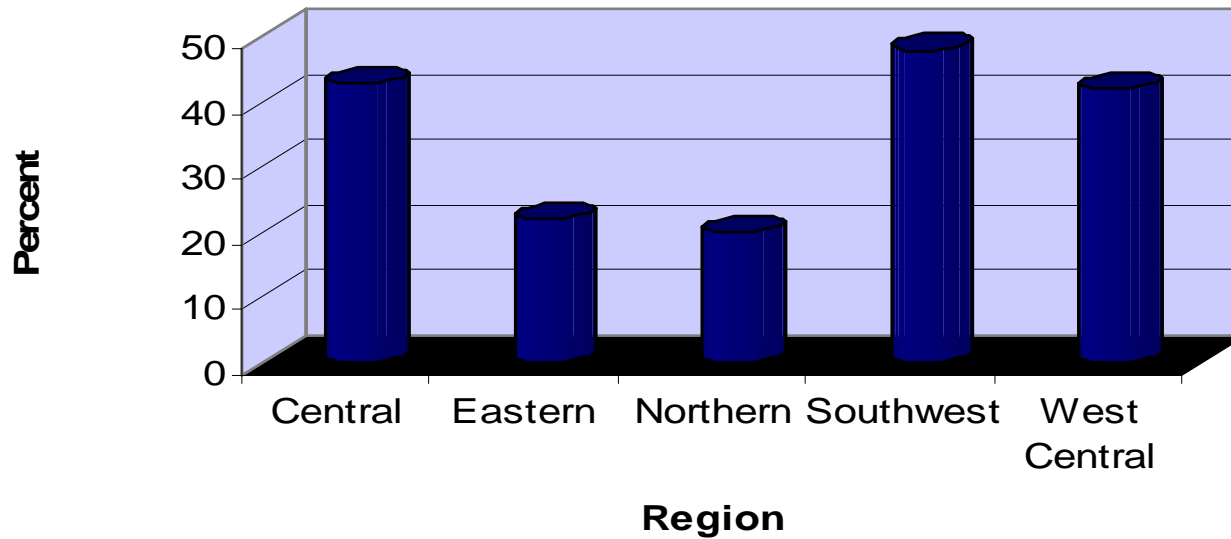
# MOE SURVEY

## Septage destination by volume



# MOE SURVEY

**Facilities Accepting Septage (Percentage of Total)**

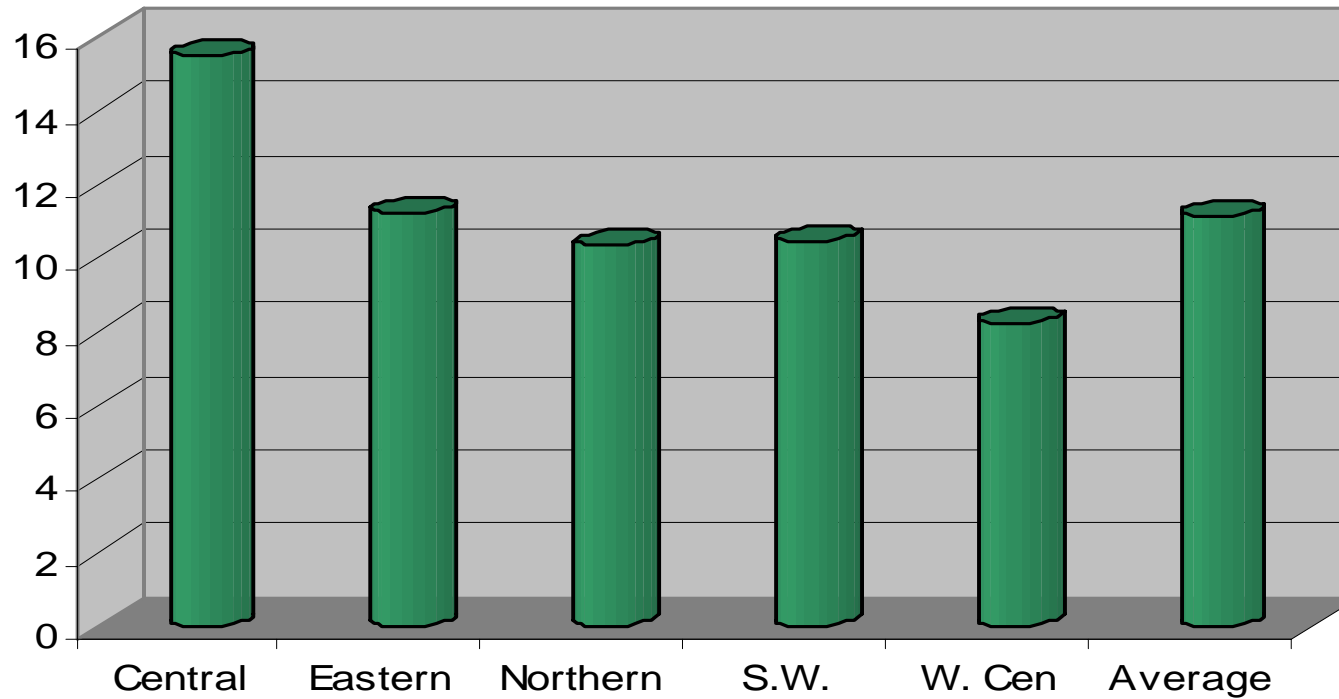


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# MOE SURVEY

**Septage Average Fee (\$/m<sup>3</sup>)**

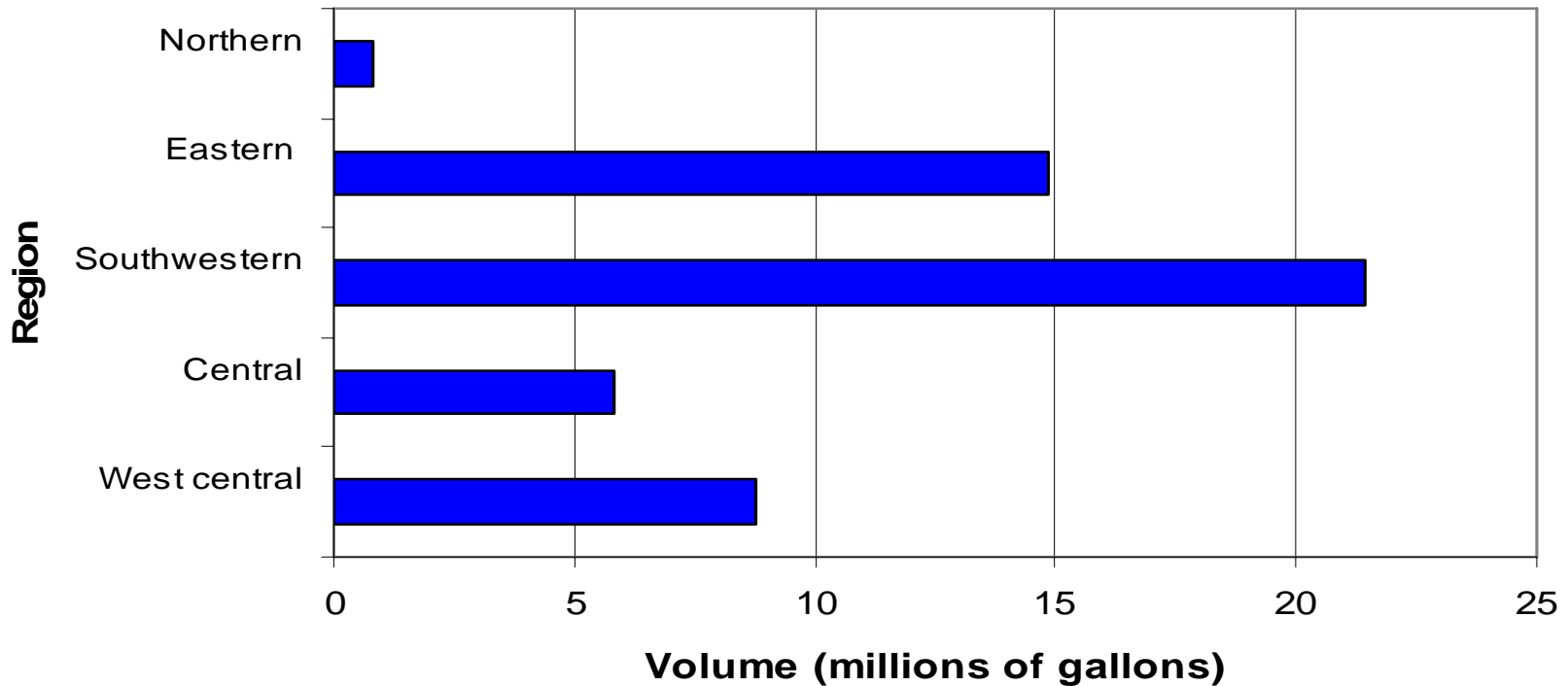


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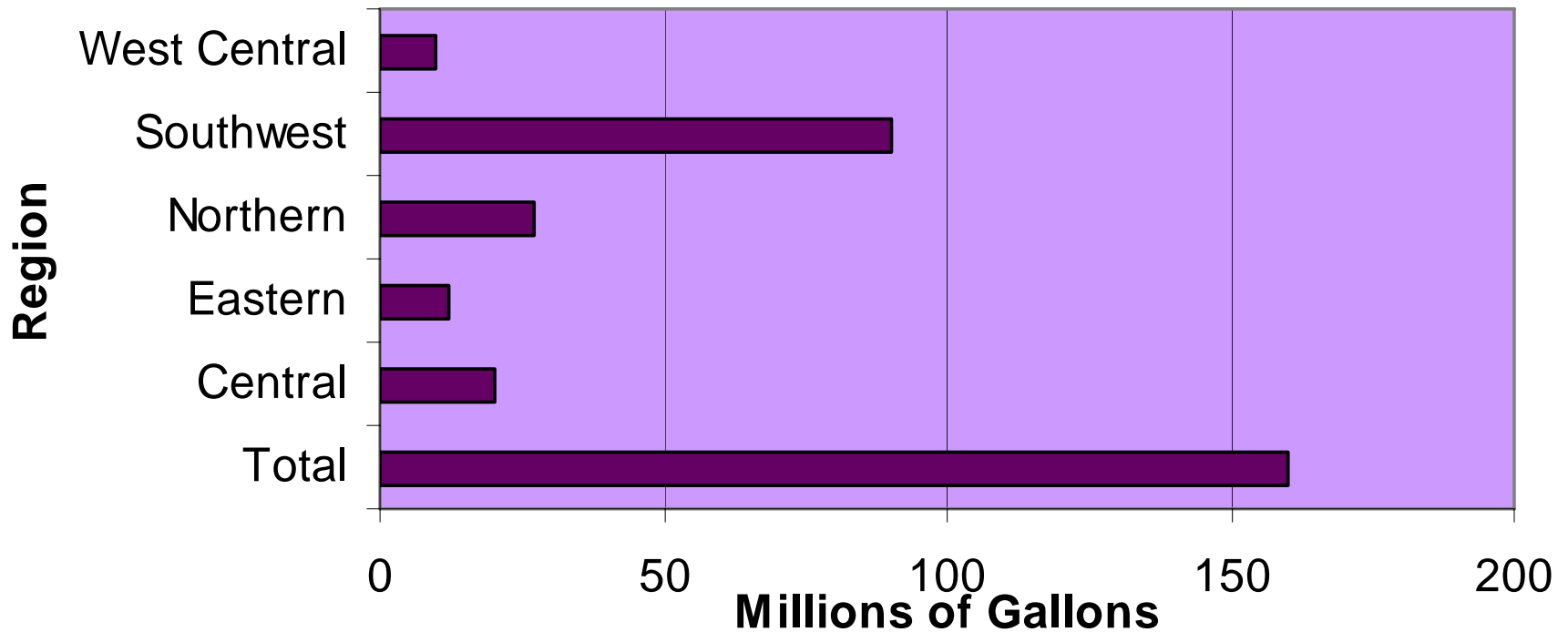
# MOE SURVEY

**Volume of Septage Sent to STPs  
(as reported by Haulers)**



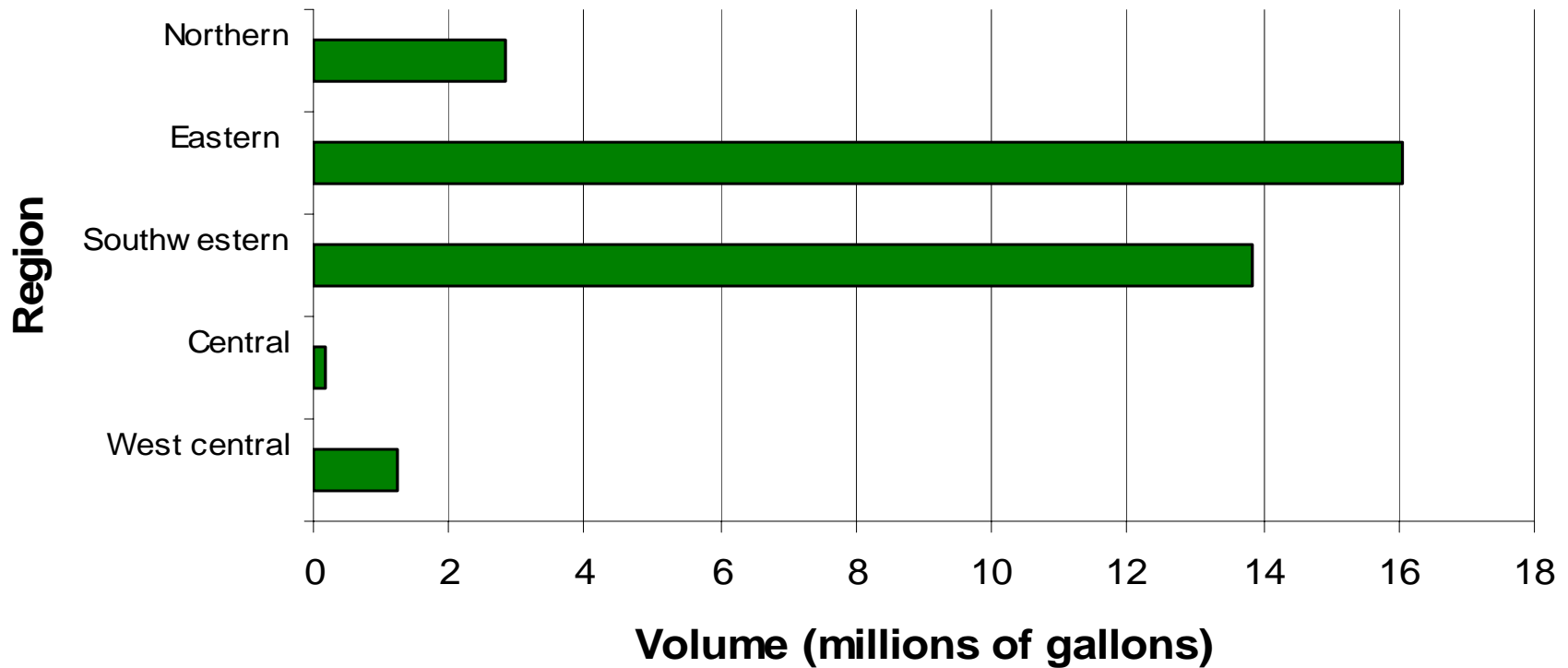
# MOE SURVEY

**Volume of Septage Received  
(as reported by STPs)**

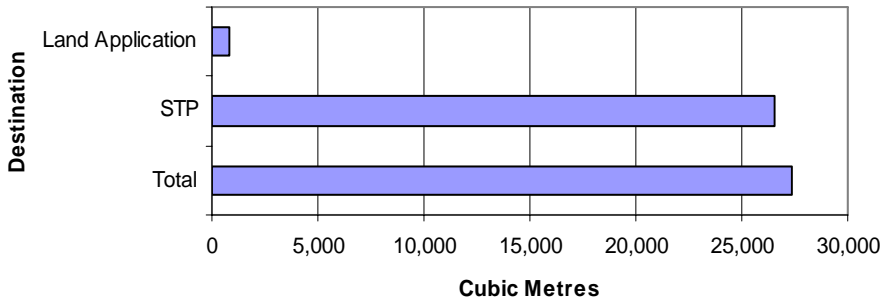


# MOE SURVEY

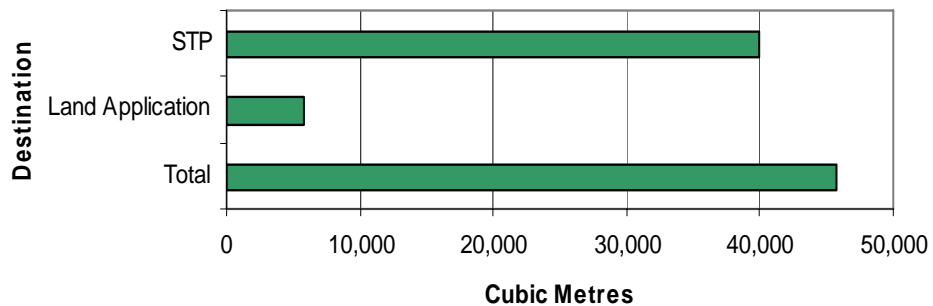
**Volume of Septage Land Applied  
(as reported by Haulers)**



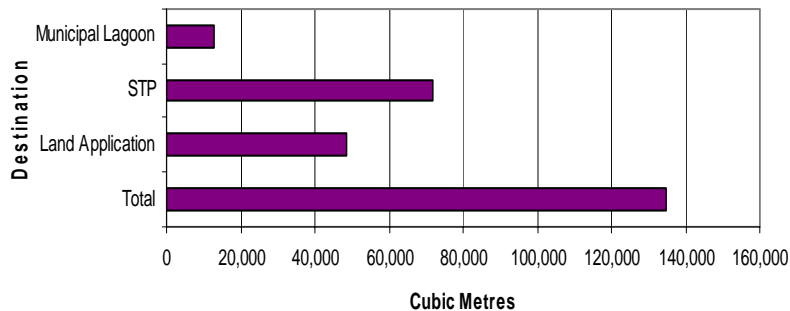
### Septage Management - Central Region



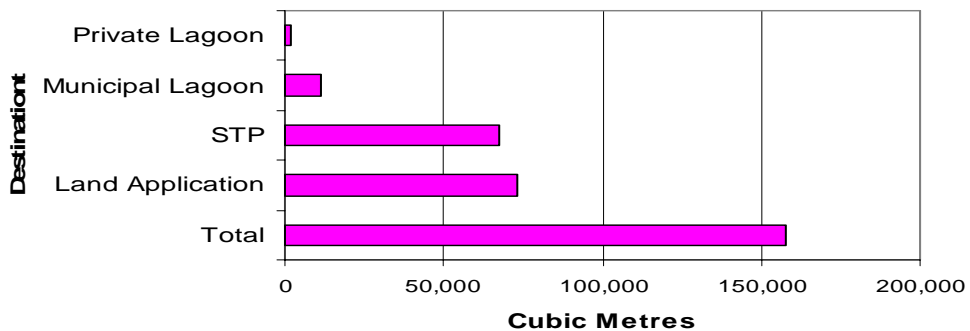
### Septage Management - West Central Region



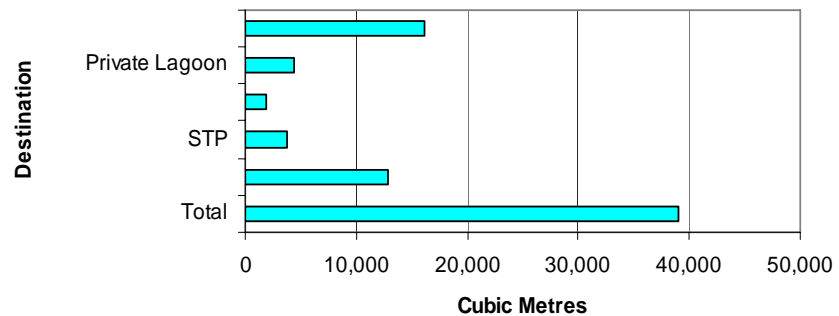
### Septage Management - Southwest Region



### Septage Management - Eastern Region



### Septage Management - Northern Region



# RESEARCH AND TECHNICAL PROJECTS

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## 1. Alkaline Stabilization and Screening Pilot

- Completed in 2005, with training provided in 2005 and 2006. Final report: <http://www.orwc.uoguelph.ca/Research/research.htm>

## 2. Alkaline Stabilization – Horton Township

- Construction of a full scale septage receiving, storage and treatment facility. Includes training for township staff. Construction – Fall 2008 and final report – late 2009.

## 3. Geotubes – Bonnechere Valley

- Dewatering/treatment of septage using a engineered textile which contains the sediment while effluent is directed to a drainage bed

## 4. Composting & Lagoon Treatment – District of Muskoka

- Report prepared and is under review looking at costs, regulatory issues and facilities in other jurisdictions

# RESEARCH AND TECHNICAL PROJECTS

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## 5. Storage Lagoons – field scale

- Lab scale study completed and found E.coli was reduced to below MOE pathogen standard. Field scale study started in 2008.

## 6. Vertical Reed Bed and Sand Bed Filters

- The beds are dewatered by gravity, drainage and evaporation. The quality is improved through filtration, though may need to be polished to reduce pathogens.

## 7. Hydrogen Peroxide Treatment – laboratory scale

- Literature review completed. Treatment similar to lime stabilization, but without raising the pH. Final report expected in late 2009.

# UPDATE ON NUTRIENT MANAGEMENT – NASM FRAMEWORK

- Non-agricultural source materials (NASM) include residual materials from municipal sewage treatment plants, pulp and paper mills, septage treated to meet standards and off-farm food processing. These are a source of nutrients and can be used as a valuable fertilizer.
- The initiative is intended to address overlapping approval requirements under the EPA and NMA.
  - o Stage 1 (completed) – extended phase-in date for NASM generators and receivers required to have nutrient management strategies and plans by two years to December 31, 2008 and December 31, 2009. Decision notice was posted on the EBR in October 2006.
  - o Stage 2 –The second stage, which is currently underway, will entail improvements to the regulatory framework to manage NASM as a nutrient resource with benefits to crop production on agricultural land, rather than as a waste.

# UPDATE ON NUTRIENT MANAGEMENT – NASM FRAMEWORK cont'd

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- Currently, in cases where NASM is considered a waste (such as sewage biosolids), there are overlapping approval requirements under the *Nutrient Management Act, 2002* and the *Environmental Protection Act*.
- The goal of the proposed framework is to eliminate the overlap and develop and revise existing standards for NASM to include greater detail and a wider range of alternatives.
- The proposed framework would cover application of all nutrients on all the agricultural land in the province.
- The following overview is based on the plain language proposed framework, which was posted on the Environmental Registry in September 2007. Staff are considering comments received on this posting and as a result standards may be subject to change.

# UPDATE ON NUTRIENT MANAGEMENT – NASM FRAMEWORK cont'd

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- The proposed framework (as posted on the Environmental Registry in September) would create 6 categories of NASM (e.g. sewage biosolids are classified in Category 5, treated septage would be either Category 5 or Category 6).
- Each proposed category determines the level of approval required for nutrient management strategies and plans for the materials in the category. For instance, Categories 5 and 6 would require an approved nutrient management strategy and approved nutrient management plan.
- In addition to the basic categorization, NASM is also sub-categorized based on the concentration of metals, pathogen content and odour annoyance potential. The standards for land application and storage of NASM are based on these characterizations.
- The framework also introduces the requirement for a field nutrient management plan prepared by a certified person. The plans will identify all farm fields that will receive NASM and will provide details on how the NASM is to be applied to optimize the nutrient benefit and minimize adverse environmental impact.

# UPDATE ON NUTRIENT MANAGEMENT – NASM FRAMEWORK cont'd

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## Proposed Requirements for Category 5 material

- Sampling and analysis would be required to determine the level of metals and pathogens.
- Other parameters such as ammonia, nitrates and total volatile solids would also have to be tested.
- In addition, determination of the odour annoyance potential would be required (for liquid/solids) which relates to the amount of dissolved oxygen and how solids have been dewatered, respectively.
- Requirements for setbacks from surface water and wells, minimum depth to bedrock, winter application, depth of unsaturated soil, pre-harvest grazing and separation distances are dependent on the outcomes of the analysis of metals, pathogens and odour annoyance potential.

# UPDATE ON NUTRIENT MANAGEMENT – NASM FRAMEWORK cont'd

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## Proposed Requirements for Category 6 material

- Category 6 captures materials not specifically listed in other categories or where materials from different categories are mixed together.
- Land application standards of these materials can be addressed through the technical requirements of an OMAFRA approved nutrient management strategy and an OMAFRA approved nutrient management plan.
- The OMAFRA director would set parameters and sampling and analysis requirements which would be represented in the nutrient management strategy.
- The maximum application rate would be based on the maximum application rate of the material calculated for nitrogen, phosphorous and metals, and depending on the NASM, sodium, boron and fat, oil and grease.

# UPDATE ON NUTRIENT MANAGEMENT – NASM FRAMEWORK

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- A proposal to further extend the phase-in dates for some generators and receivers of NASM was posted on the Environmental Registry for comment. The posting proposes to do the following:
  - A. Extend the phase-in date by one year to December 31, 2009 for some NASM generators who would currently have to comply with the requirements of the regulation and have nutrient management strategies by December 31, 2008; and
  - B. Extend the period to December 31, 2009, during which phased-in farms, (i.e., farms that are required to have a nutrient management strategy) that are between 5 and 300 nutrient units, are able to apply NASM to agricultural lands under a Certificate of Approval without the need to have a separate nutrient management plan under the General Nutrient Management Regulation.
- o Comments are currently being considered, and a decision will be posted in the near future.

# CONCLUDING REMARKS

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- To successfully end the practice of spreading untreated septage, there must be capacity to treat septage, either at municipal sewage treatment plants or with viable alternative treatment options. That capacity does not yet exist across the province. This is why an incremental approach is required.
- The ministry is working closely with stakeholders to develop treatment capacity, treatment standards and new technologies to manage septage in Ontario.