

# Business Item: 2017-52 University of Minnesota Phosphorus Study

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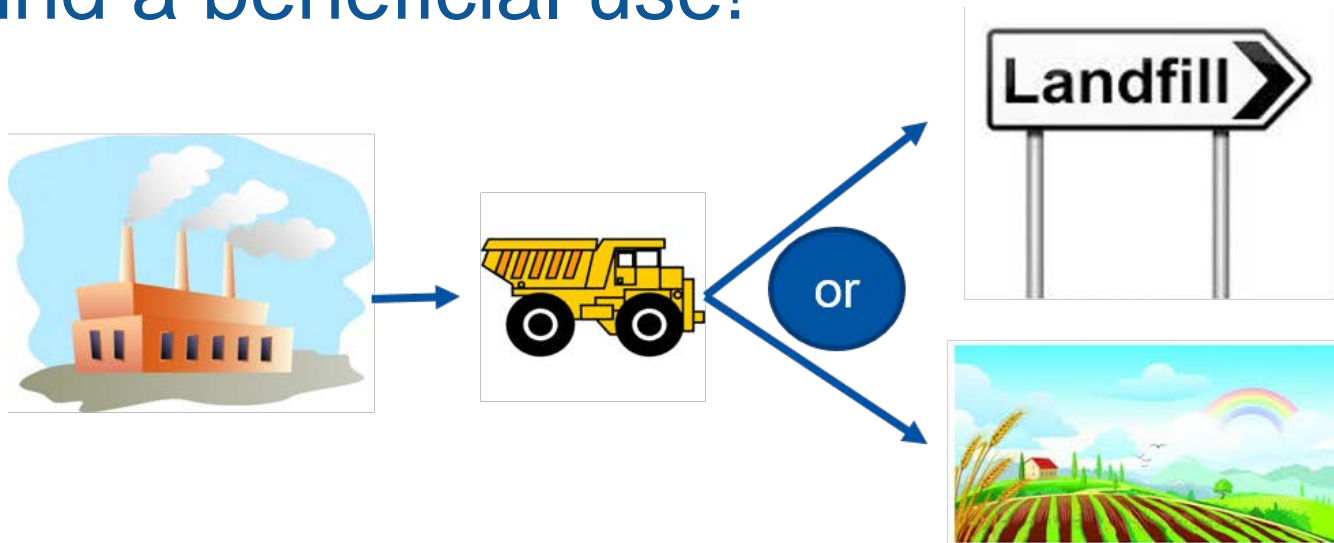
Carl Rosen, Professor and Soil Scientist, U of M

Environment Committee: February 14, 2017



# Background

- Produced ash is currently landfilled
- Metro ash contains 13% Phosphorus
  - Phosphorus is a finite element needed to live
- Find a beneficial use!



# Thrive Lens Analysis

Thrive Lens	Examples
Sustainability	Nutrient recovery Potential to fertilize about 35,000 acres each year
Collaboration	Partnering with U of MN Establish confidence in adoption of ash as fertilizer
Stewardship	Nitrogen reduction

# Project Objective

Determine the **viability** of sewage sludge incinerator ash as a phosphorus fertilizer in terms of its impacts on plant growth, soil characterization, and soil microbial populations

- Does it work?
- Is it worth it?

# Previous Research

- 1990s - Land application of 1980s ash
- 2015 - Greenhouse study with cleaner ash
- Next step – Field study

# Approach

Comprehensive literature review	
Incubation	<ul style="list-style-type: none"><li>• Phosphorus release</li><li>• Trace metals release</li><li>• Microbial characterization</li></ul>
Field Study	<ul style="list-style-type: none"><li>• Corn and soybean growth</li><li>• Phosphorus, metal concentration, microbial activity in soil</li><li>• Phosphorus and metal concentration in plants</li></ul>

# Rosemount Research and Outreach Center



# Timeline

	2017				2018				2019				2020	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
<b>Incubation</b>	█													
<b>Growing Season</b>		█				█				█				
<b>Chemical Characterization</b>		█					█				█			
<b>In situ field probes</b>			█				█				█			
<b>Plant Analysis</b>				█				█				█		
<b>Soil Analysis</b>		█				█				█				
<b>Microbial Analysis</b>			█				█				█			
<b>Interim Reports</b>		█		█		█		█		█		█		
<b>Final Report</b>													█	



# Proposed Action

- That the Metropolitan Council authorize its Regional Administrator to enter into a contract with the University of Minnesota for \$605,108 to conduct an evaluation of metro sewage sludge incinerator ash as a phosphorus source for crop production

# Questions?