Wisconsin's Initiative for Sustainable Cleanups (WISC)

A GREENER CLEANUP WORKSHOP

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77 West Jackson Blvd, Chicago

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WISC Guiding Principle

“Sustainability should be considered in remedy selection and implementation, but must not compromise environmental protection.”

WISC Goals

- Develop guidance document
  - Develop meaningful sustainability performance metrics.
  - Easy to use and implement and broadly applied to state and federal remedial activities.
  - Provide a pathway for greener optimization of existing systems.

Current Status

WDNR Selected AECOM based on qualifications from 24 environmental and engineering firms

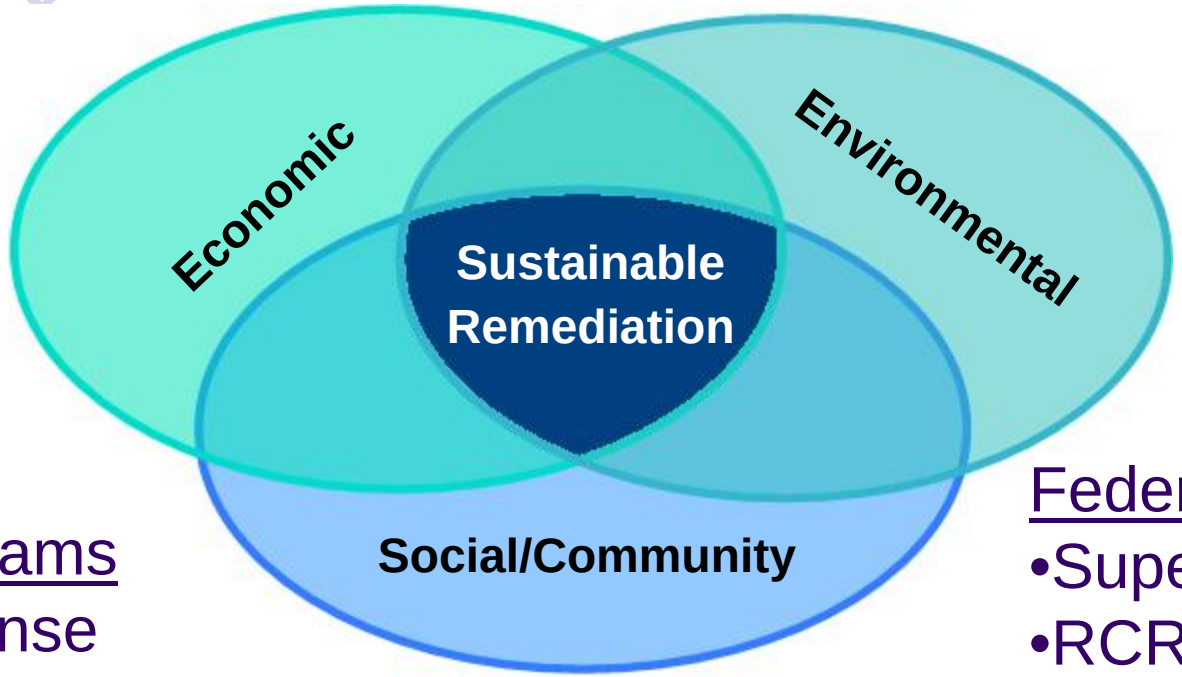
- Project was funded in Wisconsin's FY 2009 budget
- WISC DNR PM guidance document being drafted
- Recommendations for sustainable options for selected state funded remediation sites

WISC Guidance

Chapters

1. History and goals of WISC
2. Sustainable remediation overview
3. Remedy selection
4. Baseline creation
5. Process optimization
6. Alternative energy
7. Sustainability matrix

Chapter 1 History and Goals

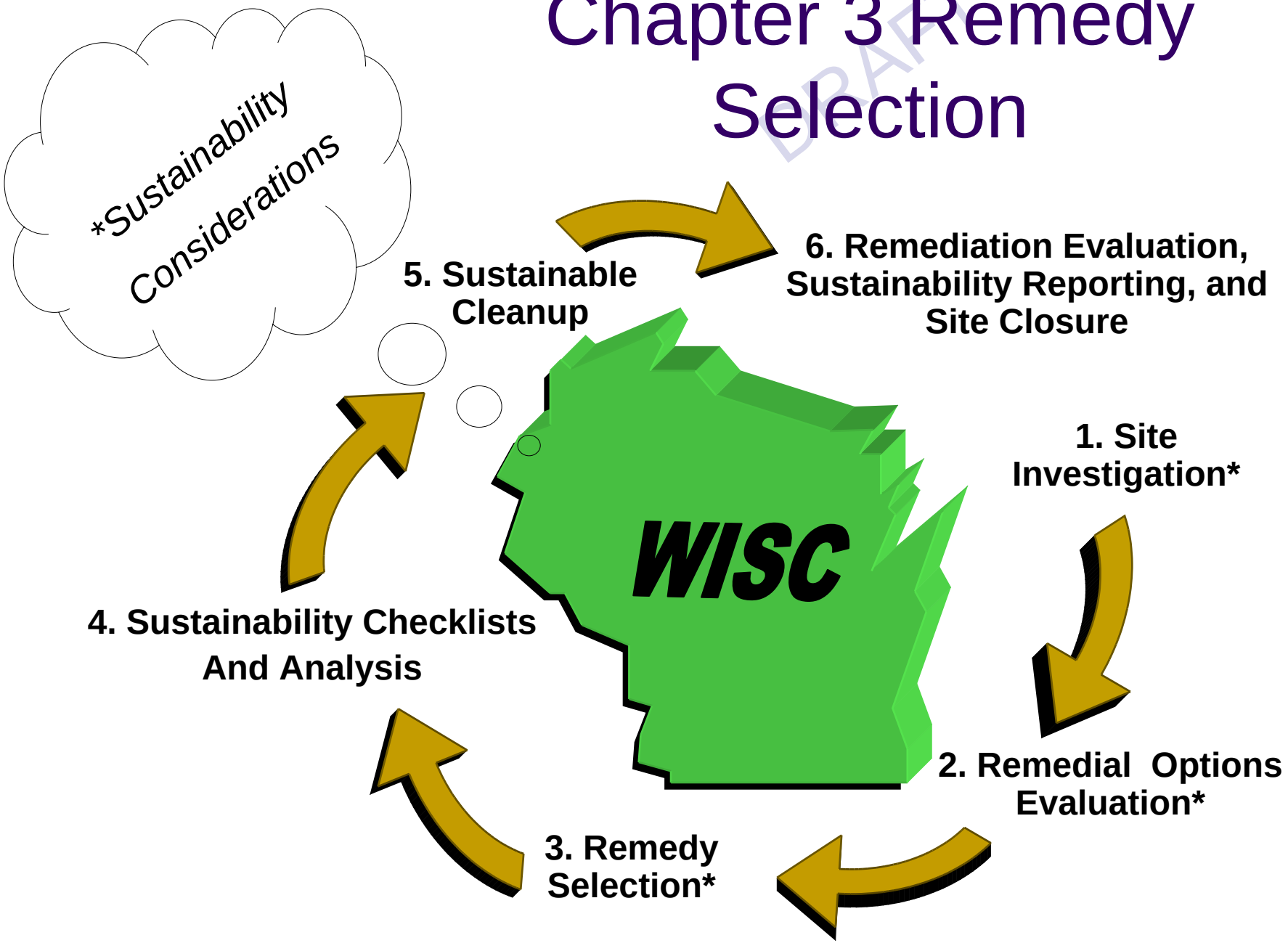


State Programs
- Spill response
- State-funded
- Responsible/Voluntary Party
- Land recycling
- Landfill cleanups
- Abandoned containers

Federal Programs
- Superfund
- RCRA
- LUST
- Federal facilities
- Brownfields
- Emergency removals

Chapter 2 Sustainable Remediation Overview

Chapter 3 Remedy Selection

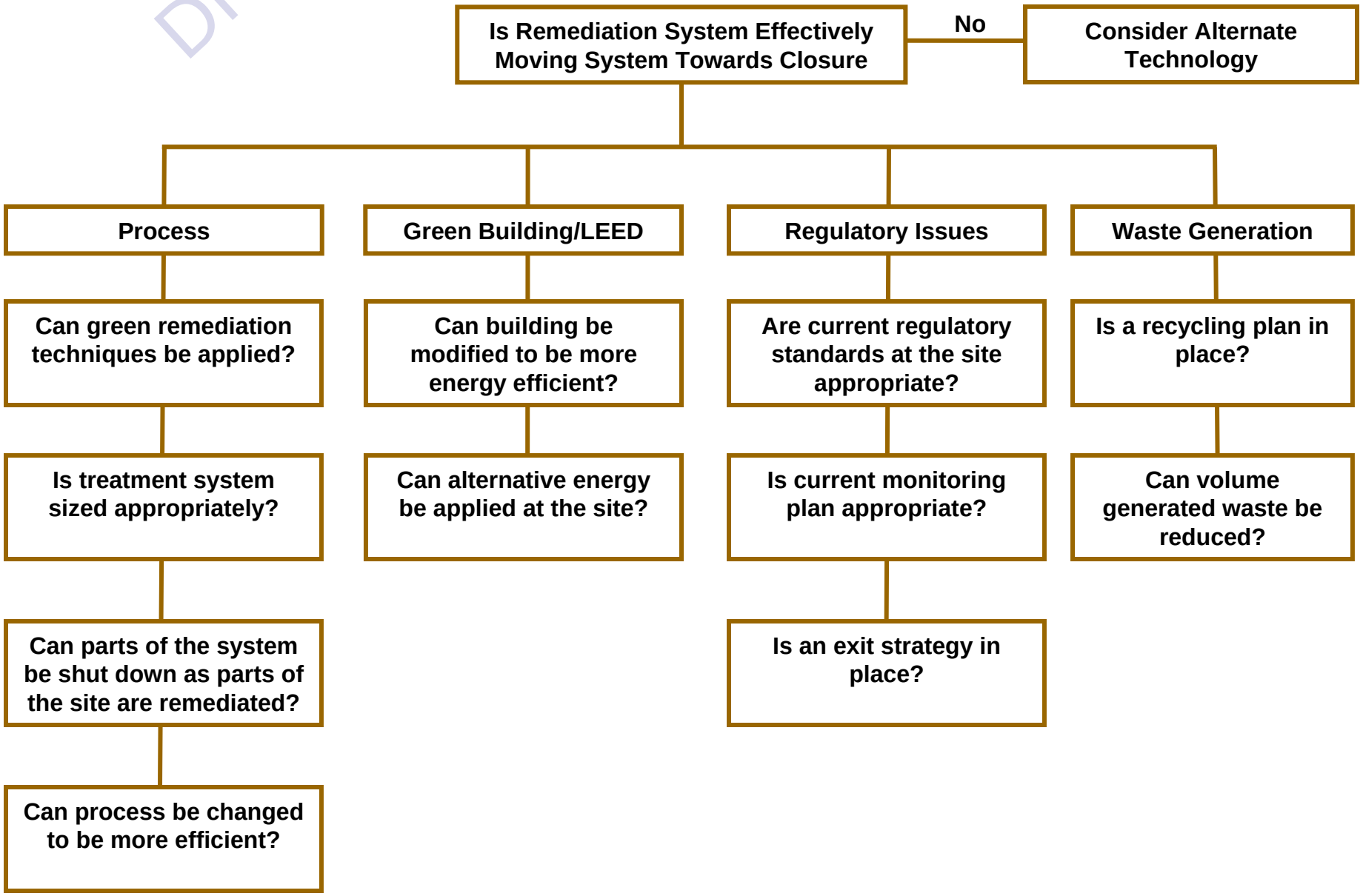


Chapter 4 Baseline Creation

Prepare a baseline for new or existing sites:

- Sustainability metrics
- Available tools
- Carbon footprint/greenhouse gas components
- Energy usage
- Life cycle costing
- Water usage and waste generation

Chapter 5 Process Optimization



Chapter 6 Alternative Energy

Apply LEED and RPO Strategies to Reduce Energy Consumption at Site

Calculate Energy Usage and Carbon Footprint of Modified System

Does Energy Usage/Carbon Footprint Warrant the Use of Alternative Energy Application

No → Do Not Use Alternate Energy

Is Site Suitable for Solar Energy Generation (See Section____)

Yes → Further Evaluate Solar Energy

Is Site Suitable for Wind Energy Generation (See Section____)

Yes → Further Evaluate Wind Energy

Is Site Suitable for Biomass Energy Generation (See Section____)

Yes → Further Evaluate Biomass Energy Generation

Is Site Suitable for Geothermal Heating/Cooling (See Section____)

Yes → Further Evaluate Geothermal Heating Cooling

Six Selected State Lead Sites

Site	Site Status	Remedial Process	Contaminants
N.W. Mauthe	Superfund	Pump and Treat	Chromium, Chlorinated VOCs
Wisconsin Chrome	State Lead	Pump and Treat/Injection	Chromium and Chlorinated VOCs
Minocqua Cleaners	State Lead	Pump and Treat/Injection	Chlorinated VOCs
Refuse Hideaway	Superfund	Leachate Collection System, Methane Collection System	Methane, Leachate
Delafield Landfill	State Lead	Leachate Collection System, Methane Collection System	Methane, Leachate
Pentawood	Superfund	LNAPL Recovery, Bioventing, Pump and Treat	LNAPL, Pentachlorophenol, Fuel Oil

NW Mauthe (Appleton)

Chapter

N.W. Mauthe
Draft Site Specific Sustainable Remediation System Evaluation

Prepared for:
Wisconsin Department of Natural Resources
Bureau of Remediation and Redevelopment
101 South Webster Street
Madison, WI 53703

Prepared by:
AECOM
200 Indiana Avenue
Stevens Point, WI 54481

September 2009

NW Mauthe
Carbon Footprint calculation

Carbon Footprint Calculations - **Baseline Conditions**

Mauthe
725 South Outagamie Street
Appleton, WI 54914-5072

Scope 1

				Emission Factors			Mass			CO_2e Greenhouse Gas Potentials			Total		
	Year	Usage (therms/yr)	Usage (TJ/yr)	kg CO_2/TJ	kg CH_4/TJ	kg N_2O/TJ	kg CO_2	kg CH_4	kg N_2O	1 kg CO_2e/kg CO_2	25 kg CO_2e/kg CH_4	296 kg CO_2e/kg N_2O	kg CO_2e	lb CO_2e	ton CO_2e
Gaseous Fuels Burned On-Site Natural Gas	2008	1,714	0.18	64,200	10	0.6	11,606.94	1.81	0.11	11,608.94	45.20	32.11	11,684.24	25,763.76	12.88
		See Note 1		*See Note 2*	*See Note 2*	*See Note 2*					*See Note 3*	*See Note 3*			

Scope 2

				Emission Factors			Mass			CO_2e Greenhouse Gas Potentials			Total		
	Year	Usage (kWh)	Usage (GWh)	lb CO_2/GWh	lb CH_4/GWh	lb N_2O/GWh	lb CO_2	lb CH_4	lb N_2O	1 lb CO_2e/lb CO_2	25 lb CO_2e/lb CH_4	296 lb CO_2e/lb N_2O	kg CO_2e	lb CO_2e	ton CO_2e
Purchased Electricity	2008	13,488	0.013488	1.66	19.24	27.59	0.02	0.26	0.37	0.02	6.49	110.15	52.92	116.66	0.06
		See Note 1		*See Note 4*	*See Note 4*	*See Note 4*					*See Note 3*	*See Note 3*			

Scope 3

				Emission Factors			Mass			CO_2e Greenhouse Gas Potentials			Total		
	Year	Usage (miles/yr)	Usage (gal/yr)	kg CO_2/gallon	kg CH_4/gallon	kg N_2O/gallon	kg CO_2	kg CH_4	kg N_2O	1 kg CO_2e/kg CO_2	25 kg CO2e/kg CH_4	296 kg CO2e/kg N_2O	kg CO_2e	lb CO_2e	ton CO_2e
Sampling/O&M Vehicle Usage Unleaded Gasoline	2008	3,000	166.67	8.81	0.0036	0.0004	1,468.33	0.61	0.07	1468.33	15.18	19.54	1,503.05	3,314.22	1.66
				See Note 5	*See Note 5*	*See Note 5*					*See Note 3*	*See Note 3*			

Assumptions: *Unleaded gasoline used for consultant transport to conduct O&M activities.*
60 site visits/year
50 miles/visit (round trip)
18 miles/gallon (for field vehicle)

Totals		
kg CO_2e	lb CO_2e	ton CO_2e
13,240.21	29,194.64	14.60

Sustainability Matrix

Sustainability Matrix								
	Baseline[1]		Option 1		Option 2		Option 3	
Sustainability Metrics[1,2]	**Annual**	**Life Cycle**	**Annual**	**Life Cycle**	**Annual**	**Life Cycle**	**Annual**	**Life Cycle**
Stewardship								
System Optimization (Qualitative)								
Restoration Timeframe (yrs)								
Carbon Footprint/Air Emissions								
Tons CO2e								
Tons CO2 Sequestered								
Dust/Particulates								
Energy Usage								
Electricity (kWh)								
Natural Gas								
Cost								
Current Cost								
Cost of Modification								
Water								
Water Usage/Resource depletion (Gallons)								
Water Recycled/Reused (Gallons)								
Land & Ecosystems								
Total Area disturbed or requires institutional controls (acres)								
Area returned to unrestricted beneficial use or habitat enhancement (acres)								
Community Benefits (qualitative)								
Materials & Waste Generation								
Recycled material (tons) or qualitative								
Waste materials generated (tons)								
Landfill capacity used (Yds)								

Path Forward

- ✓ Implement sustainable remediation at select state lead sites and monitor effectiveness.
- ✓ Provide training on sustainable remediation WISC guidance across R&R program.
- ✓ Get feedback from internal and external stakeholders and revise as appropriate.
- ✓ Establish formal recognition program which is key for Responsible Parties/Voluntary Parties.

Path Forward (cont.)

Suggestions being evaluated:

- ✓ Regulatory innovation to encourage implementing sustainable remediation
- ✓ Pilot Green Tier/EMS programs within DNR
- ✓ Explore a “LEED”-like system for WISC cleanups
- ✓ Research other types of incentives
- ✓ Evaluate need for rule changes

Brief other state agencies on the initiative – Departments of Agriculture, Trade and Consumer Protection & Commerce; Governor’s Greenhouse Gas Task Force

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