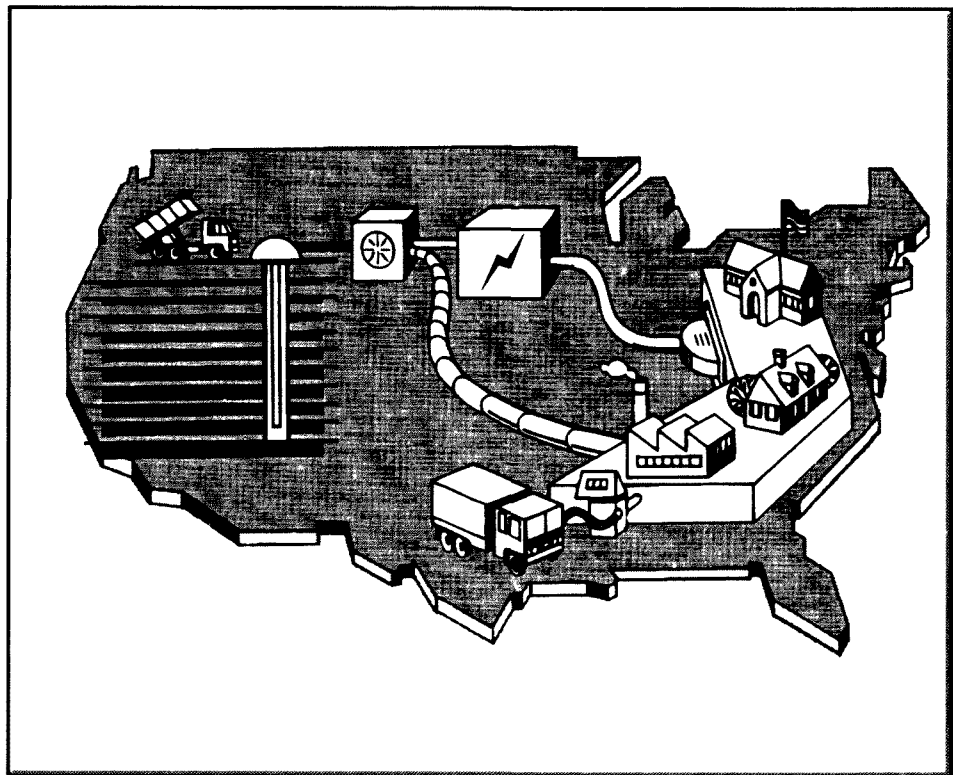




Landfill Gas-to-Energy Project Opportunities

Landfill Profiles for the State of Minnesota



EPA Landfill Methane Outreach Program



The EPA Landfill Methane Outreach Program, a key component of the United State's *Climate Change Action Plan*, encourages the use of landfill gas (LFG) as an energy resource. EPA assists utilities, municipal and private landfill owners and operators, tribes, and state agencies in reducing methane emissions from landfills through the development of profitable landfill energy recovery projects. Methane captured from landfills can be transformed into a cost-effective fuel source for electricity, heat, boiler and vehicular fuel, or sale to a pipeline. EPA estimates there are approximately 200 landfill methane recovery projects in the U.S. and that up to 750 landfills could install economically viable landfill energy projects.

The Landfill Methane Outreach Program includes five important components: the State Ally, Energy Ally, Industry Ally, Community Partner, and Endorser programs. EPA establishes separate alliances with state agencies, energy providers (including investor-owned, municipal and other public power utilities and cooperatives), key trade and public sector associations, members of the landfill gas development industry (including developers, engineers, equipment vendors, and others) and local communities, municipalities and landfill owner/operators through a Memorandum of Understanding (MOU). By signing the MOU, each Ally/Partner acknowledges a shared commitment to the promotion of landfill gas-to-energy recovery at solid waste landfills, recognizes that the widespread use of landfill gas will reduce emissions of methane and other gases, and commits to undertake activities to enhance development of this resource. In return, EPA agrees to provide landfill gas-to-energy project assistance and public recognition of the Allies' and Partners' participation in the program.

Introduction

Since 1994 the U.S. EPA's Landfill Methane Outreach Program (LMOP) has participated in an ongoing effort to gather information on Municipal Solid Waste landfills (MSW). A key component of the LMOP is to provide MSW landfill owners and operators, project developers, utilities, and other potential project participants with information on MSW landfills that may offer attractive energy development opportunities. This document presents state specific landfill information, hereinafter referred to as the landfill profiles. These profiles are useful to evaluate the potential for developing landfill gas-to-energy projects (LFGTE). EPA assembled this information from state and local sources as well as various national solid waste publications, landfill owners and operators, and project developers.

The EPA has prepared a separate document to describe the methodology used to develop the state-specific landfill profiles and estimate the benefits of using LFGTE as an energy source. The document, *Landfill Gas-to-Energy Project Opportunities, Background Information on Landfill Profiles*, contains background information on gas collection and use, describes the data fields according to the five sections listed on the landfill profiles, and where applicable, illustrates calculations and default values used to derive estimates. EPA strongly recommends that users read the document prior to using the landfill profiles. Users can obtain the document by calling the LMOP hotline at 1-888-STAR-YES.

Data Sources

- EPA-ORD Landfill Gas Utilization-Survey (Thomeloe, 1997)
- Directory and Atlas of Solid Waste Disposal Facilities (SWA, 1994)
- Implementation Guide for Landfill Gas Recovery Projects in the Northeast (SCS, 1994)
- Landfill Gas-to-Energy 1994-1995 Activity Report (SWT, 1994)
- Methane Recovery from Landfill Yearbook (GAA, 1994)
- Project developers, landfill owners, and operators
- State and local records
- Survey of Landfill Gas Generation Potential (EPRI, 1992)
- U.S. Landfill Directory (SWANA, 1992)

Landfill Classification

To facilitate the use of available landfill information, EPA has categorized the landfills into five categories: Current Project,¹ Candidate Project, Shutdown, Other, and Unknown waste-in-place (WIP). These categories are based on the status of the landfill's LFGTE project(s) and WIP. The generation of methane is a function of many factors, the most critical being the amount of waste-in-place and the number of years the waste has been in the landfill. Peak methane generation occurs soon after closure; therefore, the longer the landfill has been closed, the less attractive it becomes for methane recovery. Based on the general timing of peak methane generation, EPA assumes that landfills that ceased accepting waste prior to 1993 have a low probability of generating enough methane to make a gas recovery project economical. Consequently, landfills need to be operating in 1993 to be considered as having a Candidate Project.

Landfill Categorizes

Current Project:

- Landfill with operational LFGTE project or landfill with LFGTE project under construction.

Candidate Project:

- Landfill with a potential or planned LFGTE utilization project; or
- Landfill is currently operating or closed after 1993; and has more than 1,000,000 tons of municipal solid waste-in-place.²

Shutdown:

- Landfill with shutdown LFGTE project.

Other:

- Landfill has less than 1,000,000 tons of municipal solid waste-in-place with no current or planned LFGTE project.

Unknown WIP:

- Landfill with insufficient data to determine the waste-in-place.

State Summary

State-specific landfill profile information is summarized in three exhibits. Exhibit 1 presents a summary of the state-specific potential for LFG utilization energy by landfill category. Exhibit 2 summarizes the emissions avoided by fossil fuel displacement for electricity generation and direct use projects. Exhibit 3 presents an index of the state-specific MSW landfills, referenced by category, landfill name and general characteristics.

¹ Current projects illustrate the wide range of successful project development options.

² By modeling the relationship between WIP and methane generation, a cut-off of 1,000,000 tons of WIP was established; landfills having at least 1,000,000 tons of WIP are considered candidate landfills.



Exhibit 1: Minnesota MSW Landfill Summary

Category	No. of Landfills	Est. Capacity Potential		Est. CH4 Generation (mmscf/d)	Methane Reduction (tons/yr)		CO2 Equivalent of CH4 Reduction (tons/yr)	
		Electricity (MW)	Gas Capacity (mmBtu/hr)		Potential	Current	Potential	Current
Current	5	30	302	10	55,843	55,118	1,172,707	1,157,476
Candidate	4	10	103	3	19,100	0	401,104	0
Other	6	10	97	3	18,051	0	379,065	0
Unknown WIP	8							
Total	23	50	502	16	92,994	55,118	1,952,876	1,157,476

Exhibit 2: Potential Minnesota Emissions Avoided by Fossil Fuel Displacement

Category	Electricity Generation Project						Direct Use Project					
	CO2 (tons/yr)			SO2 (tons/yr)			CO2 (tons/yr)			SO2 (tons/yr)		
	Coal	Oil	Natural Gas	Coal	Oil	Natural Gas	Coal	Oil	Natural Gas	Coal	Oil	Natural Gas
Current	237,572	194,988	131,113	1,502	1,255	0	168,164	138,022	92,808	1,530	804	1
Candidate	82,085	67,372	45,302	519	434	0	57,518	47,208	31,743	523	275	0
Other	77,349	63,485	42,688	489	409	0	54,358	44,614	29,999	495	260	0
Unknown WIP												
Total	397,006	325,845	219,102	2,510	2,098	0	280,039	229,844	154,550	2,548	1,339	1

Exhibit 3: Index of Landfills in Minnesota

Category	Landfill Name	WIP			Landfill Operating in 1998	LFG Collected	LFG Utilization Project	Status of LFGTE Project
		<2.5 million tons	2.5 to 4 million tons	>4 million tons				
Current	Anoka Municipal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Operational
Current	Burnsville SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Operational
Current	Flying Cloud	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Operational
Current	Pine Bend SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Operational
Current	Woodlake SLF	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Operational
Candidate	Blue Earth County	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Unknown
Candidate	Elk River SLF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Candidate	Lyon County SLF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Candidate	Salol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Other	Albert Lea	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Unknown
Other	Crow Wing County SLF (new)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Unknown
Other	East Central SLF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Other	Forest City Road LF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Other	Freeway	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Unknown
Other	Louisville	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	Brown County SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	Clay County SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	Crow Wing County SLF(old)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	Kandiyohi County SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	Polk County SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	Rice County SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	Steele County SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown
Unknown WIP	WLSDD SLF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unknown

A. GENERAL LANDFILL INFORMATION

Landfill Owner:	Annual Acceptance Rate (tons):	77,480
Landfill Owner Type:	Year Annual Acceptance Rate Reported:	1993
Alternative Landfill Name: WMI-Ramsey	Design Capacity (tons):	
City: Anoka	Acres Currently Landfilled (acres):	64
County: Anoka	Average Depth (feet):	110
State: MN	1994 Waste-in-Place (tons):	3,419,316
Year Open: 1972	1998 Waste-in-Place (tons):	3,419,316
Year Closed: 1994		

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d):	1.29
LFG Collection System Status:	Operational
Current LFG Collected (mmscf/d):	2.8
Collection and Treatment System Required Under NSPS/EG:	No

C. LANDFILL GAS UTILIZATION

Current Utilization:

Utilization System Status:	Operational
Utilization System Type:	Medium Btu
Utilization System Start Year:	1989
Electric Utility Provider(s):	
Natural Gas Provider(s):	
Energy Purchaser(s):	

Capacity:	Electricity Generation Project (MW)	OR	Direct Use Project (mmBtu/hr)
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Estimated Potential Capacity:	4	40
Current Capacity:	1.8	13
Planned Capacity:		

Utilities in County:	Anoka Electric Cooperative; Anoka Electric Dept; Anoka Municipal Utility; Northern States Power C
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D. ENVIROMENTAL BENEFITS OF UTILIZATION

	Potential		Current	
Methane Reduction (tons/yr):	7,473		10,792	
CO2 Equivalent of CH4 Reduction (tons/yr):	156,935		226,638	
Emissions Avoided by Fossil Fuel Displacement:	Electricity Generation Project		Direct Use Project	
	CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)
Coal:	31,571	200	22,504	205
Fuel Oil:	25,912	167	18,470	108
Natural Gas:	17,424	0	12,420	0

E. CONTACT INFORMATION

	Landfill Owner	Landfill Operator
Contact Name:		
Mailing Address:		
Phone Number:		
Fax Number:		

* Italicized indicates values estimated by EPA.

December 5, 1998

State: MN

Page:

1



A. GENERAL LANDFILL INFORMATION

Landfill Owner:	Ponderosa of Blue Earth County	Annual Acceptance Rate (tons):	87,412
Landfill Owner Type:	Private	Year Annual Acceptance Rate Reported:	1993
Alternative Landfill Name:	Ponderosa LF	Design Capacity (tons):	
City:		Acres Currently Landfilled (acres):	67
County:	Blue Earth	Average Depth (feet):	
State:	MN	Waste-in-Place (tons):	2,097,888
Year Open:	1973	1998 Waste-in-Place (tons):	2,272,712
Year Closed:	2066		

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d): 1

LFG Collection System Status: Operational

Current LFG Collected (mmscf/d):

Collection and Treatment System Required Under NSPS/EG: No

C. LANDFILL GAS UTILIZATION

Current Utilization:

Utilization System Status: Unknown

Utilization System Type: Unknown

Utilization System Start Year:

Electric Utility Provider(s):

Natural Gas Provider(s):

Energy Purchaser(s):

Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr)

Estimated Potential Capacity:	3	31
Current Capacity:		
Planned Capacity:	1.5	21

Utilities in County: Blue Earth-Nicollet-Faribault Coop Elec Assn; Brown County Rural Elec Assn; Lake Crystal Public U

D. ENVIROMENTAL BENEFITS OF UTILIZATION

	<i>Potential</i>		<i>Current</i>	
<i>Methane Reduction (tons/yr):</i>	5,778		0	
<i>CO2 Equivalent of CH4 Reduction (tons/yr):</i>	121,328		0	
<i>Emissions Avoided by Fossil Fuel Displacement:</i>	<i>Electricity Generation Project</i>		<i>Direct Use Project</i>	
	<i>CO2 (tons/yr)</i>	<i>SO2 (tons/yr)</i>	<i>CO2 (tons/yr)</i>	<i>SO2 (tons/yr)</i>
<i>Coal:</i>	24,468	155	17,398	158
<i>Fuel Oil:</i>	20,082	129	14,280	83
<i>Natural Gas:</i>	13,503	0	9,602	0

E. CONTACT INFORMATION

Landfill Owner		Landfill Operator
Contact Name:	Ken Frederick	Ken Frederick
Mailing Address:	P.O. Box 3566	P.O. Box 3566
Phone Number:	507-389-8381	507-389-8381
Fax Number:		

A. GENERAL LANDFILL INFORMATION

Landfill Owner:	Annual Acceptance Rate (tons):	104,012
Landfill Owner Type:	Year Annual Acceptance Rate Reported:	1993
Alternative Landfill Name:	Design Capacity (tons):	
City: Burnsville	Acres Currently Landfilled (acres):	
County: Dakota	Average Depth (feet):	
State: MN	Waste-in-Place (tons):	
Year Open:	1998 Waste-in-Place (tons):	
Year Closed: 2001		

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d):

LFG Collection System Status: Operational

Current LFG Collected (mmscf/d):

Collection and Treatment System Required Under NSPS/EG: No

C. LANDFILL GAS UTILIZATION

Current Utilization:

Utilization System Status: Operational

Utilization System Type: Reciprocating Engine

Utilization System Start Year: 1994

Electric Utility Provider(s):

Natural Gas Provider(s):

Energy Purchaser(s): Northern States Power Co

Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr)

Estimated Potential Capacity:

Current Capacity:

Planned Capacity:

4

Utilities in County: Dakota Electric Association; Goodhue County Coop Elec Assn; Minnesota Valley Electric Coop; Nor

D. ENVIROMENTAL BENEFITS OF UTILIZATION

	Potential	Current
Methane Reduction (tons/yr):		
CO2 Equivalent of CH4 Reduction (tons/yr):		
Emissions Avoided by Fossil Fuel Displacement:	Electricity Generation Project	Direct Use Project
	CO2 (tons/yr) SO2 (tons/yr)	CO2 (tons/yr) SO2 (tons/yr)
Coal:		
Fuel Oil:		
Natural Gas:		

E. CONTACT INFORMATION

	Landfill Owner	Landfill Operator
Contact Name:		John Morley
Mailing Address:		1000 West Cliff Road
Phone Number:		612-890-3248
Fax Number:		

* Italicized indicates values estimated by EPA.

December 5, 1998

State: MN

Page:

3



Elk River SLF		Landfill Category: Candidate
A. GENERAL LANDFILL INFORMATION		
Landfill Owner:	Elk River SLF Co.	Annual Acceptance Rate (tons): 66,554
Landfill Owner Type:	Private	Year Annual Acceptance Rate Reported: 1993
Alternative Landfill Name:		Design Capacity (tons):
City:	Elk River	Acres Currently Landfilled (acres): 139
County:	Sherburne	Average Depth (feet):
State:	MN	Waste-in-Place (tons): 1,464,188
Year Open:	1975	1998 Waste-in-Place (tons): 1,597,296
Year Closed:	2042	
B. LANDFILL GAS COLLECTION		
Estimated Methane Generation (mmscf/d):		0.83
LFG Collection System Status:		Planned
Current LFG Collected (mmscf/d):		
Collection and Treatment System Required Under NSPS/EG:		No
C. LANDFILL GAS UTILIZATION		
Current Utilization:		
Utilization System Status:	Unknown	
Utilization System Type:	Reciprocating Engine	
Utilization System Start Year:		
Electric Utility Provider(s):		
Natural Gas Provider(s):		
Energy Purchaser(s):		
Capacity:	Electricity Generation Project (MW)	OR Direct Use Project (mmBtu/hr)
Estimated Potential Capacity:	3	26
Current Capacity:		
Planned Capacity:	1.2	18
Utilities in County: Anoka Electric Cooperative; East Central Electric Assn; Elk River Muni Utils; Northern States Powe		
D. ENVIROMENTAL BENEFITS OF UTILIZATION		
	<i>Potential</i>	<i>Current</i>
Methane Reduction (tons/yr):	4,779	0
CO2 Equivalent of CH4 Reduction (tons/yr):	100,353	0
Emissions Avoided by Fossil Fuel Displacement:	<i>Electricity Generation Project</i> CO2 (tons/yr) SO2 (tons/yr)	<i>Direct Use Project</i> CO2 (tons/yr) SO2 (tons/yr)
Coal:	20,521 130	14,390 131
Fuel Oil:	16,843 108	11,811 69
Natural Gas:	11,325 0	7,942 0
E. CONTACT INFORMATION		
	Landfill Owner	Landfill Operator
Contact Name:	Ms. Vickie Kreger	Ms. Vickie Kreger
Mailing Address:	22460 Highway 169 NW	22460 Highway 169 Northwest
Phone Number:	612-441-2464	612-441-2464
Fax Number:		

* Italicized indicates values estimated by EPA.

December 5, 1998

State: MN

Page:

4



A. GENERAL LANDFILL INFORMATION
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Landfill Owner:	BFI	Annual Acceptance Rate (tons):	514,800
Landfill Owner Type:		Year Annual Acceptance Rate Reported:	0
Alternative Landfill Name:		Design Capacity (tons):	
City:	Eden Prairie	Acres Currently Landfilled (acres):	106
County:	Hennepin	Average Depth (feet):	
State:	MN	1985 Waste-in-Place (tons):	4,799,040
Year Open:	1970	1998 Waste-in-Place (tons):	4,799,040
Year Closed:	1985		

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d):	1.65
LFG Collection System Status:	Operational
Current LFG Collected (mmscf/d):	5.5
Collection and Treatment System Required Under NSPS/EG:	No

C. LANDFILL GAS UTILIZATION

Current Utilization:

Utilization System Status:

Operational

Utilization System Type:

Reciprocating Engine

Utilization System Start Year:

1994

Electric Utility Provider(s):

Natural Gas Provider(s):

Energy Purchaser(s):

Capacity:	Electricity Generation Project (MW)	OR	Direct Use Project (mmBtu/hr)
Estimated Potential Capacity:	5		51
Current Capacity:	1.9		15
Planned Capacity:			

Utilities in County:	Anoka Electric Cooperative; Anoka Electric Dept; Elk River Muni Utils; Minnesota Valley Electric C
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D. ENVIROMENTAL BENEFITS OF UTILIZATION
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	Potential		Current	
Methane Reduction (tons/yr):		9,513		21,199
CO2 Equivalent of CH4 Reduction (tons/yr):		199,781		445,183
Emissions Avoided by Fossil Fuel Displacement:	Electricity Generation Project		Direct Use Project	
	CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)
Coal:	40,253	254	28,648	261
Fuel Oil:	33,038	213	23,513	137
Natural Gas:	22,215	0	15,811	0

E. CONTACT INFORMATION

	Landfill Owner	Landfill Operator
Contact Name:		
Mailing Address:		
Phone Number:		
Fax Number:		

A. GENERAL LANDFILL INFORMATION

Landfill Owner:	Annual Acceptance Rate (tons):	36,902
Landfill Owner Type:	Year Annual Acceptance Rate Reported:	1993
Alternative Landfill Name:	Design Capacity (tons):	
City: Marshall	Acres Currently Landfilled (acres):	
County: Lyon	Average Depth (feet):	
State: MN	Waste-in-Place (tons):	996,354
Year Open: 1970	1998 Waste-in-Place (tons):	1,070,158
Year Closed: 2020		

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d): 0.69

LFG Collection System Status:

Current LFG Collected (mmscf/d):

Collection and Treatment System Required Under NSPS/EG: No

C. LANDFILL GAS UTILIZATION

Current Utilization:

Utilization System Status: Unknown

Utilization System Type: Unknown

Utilization System Start Year:

Electric Utility Provider(s):

Natural Gas Provider(s):

Energy Purchaser(s):

Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr)

Estimated Potential Capacity:	2	22
Current Capacity:		
Planned Capacity:		

Utilities in County: Lyon-Lincoln Electric Coop Inc; Marshall Mun Util; Minnesota Valley Coop L&P Assn; Nobles Coop

D. ENVIROMENTAL BENEFITS OF UTILIZATION

	<i>Potential</i>		<i>Current</i>	
<i>Methane Reduction (tons/yr):</i>	3,999		0	
<i>CO2 Equivalent of CH4 Reduction (tons/yr):</i>	83,983		0	
<i>Emissions Avoided by Fossil Fuel Displacement:</i>	<i>Electricity Generation Project</i>		<i>Direct Use Project</i>	
	<i>CO2 (tons/yr)</i>	<i>SO2 (tons/yr)</i>	<i>CO2 (tons/yr)</i>	<i>SO2 (tons/yr)</i>
<i>Coal:</i>	17,364	110	12,043	110
<i>Fuel Oil:</i>	14,252	92	9,884	58
<i>Natural Gas:</i>	9,583	0	6,646	0

E. CONTACT INFORMATION

Landfill Owner

Landfill Operator

Contact Name:	Paul Henrickson
Mailing Address:	601 West Main
Phone Number:	507-537-6733
Fax Number:	



A. GENERAL LANDFILL INFORMATION

Landfill Owner:	Annual Acceptance Rate (tons):	181,368
Landfill Owner Type:	Year Annual Acceptance Rate Reported:	1993
Alternative Landfill Name:	Design Capacity (tons):	
City:	Inver Grove Heights	Acres Currently Landfilled (acres):
County:	Dakota	Average Depth (feet):
State:	MN	1994 Waste-in-Place (tons):
Year Open:	1971	1998 Waste-in-Place (tons):
Year Closed:	2027	

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d):	5.30
LFG Collection System Status:	Operational
Current LFG Collected (mmscf/d):	6.0
Collection and Treatment System Required Under NSPS/EG:	No

C. LANDFILL GAS UTILIZATION

Current Utilization:

Utilization System Status:	Operational
Utilization System Type:	Combined Cycle
Utilization System Start Year:	1996
Electric Utility Provider(s):	
Natural Gas Provider(s):	
Energy Purchaser(s):	Northern States Power Co

Capacity:	Electricity Generation Project (MW)	OR	Direct Use Project (mmBtu/hr)
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Estimated Potential Capacity:	17	166
Current Capacity:	10.0	79
Planned Capacity:		

Utilities in County:	Dakota Electric Association; Goodhue County Coop Elec Assn; Minnesota Valley Electric Coop; Nor
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D. ENVIROMENTAL BENEFITS OF UTILIZATION

	Potential	Current
Methane Reduction (tons/yr):	30,644	23,126
CO2 Equivalent of CH4 Reduction (tons/yr):	643,526	485,654

	Electricity Generation Project		Direct Use Project	
	CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)
Coal:	131,020	828	92,281	840
Fuel Oil:	107,535	692	75,740	441
Natural Gas:	72,308	0	50,928	0

E. CONTACT INFORMATION

	Landfill Owner	Landfill Operator
Contact Name:		Greg Chock
Mailing Address:		2495 East 117th Street
Phone Number:		612-457-2778
Fax Number:		

* Italicized indicates values estimated by EPA.

December 5, 1998

State: MN

Page:

7



A. GENERAL LANDFILL INFORMATION

Landfill Owner:		Annual Acceptance Rate (tons):	34,876
Landfill Owner Type:	Public	Year Annual Acceptance Rate Reported:	1991
Alternative Landfill Name:		Design Capacity (tons):	
City:		Acres Currently Landfilled (acres):	
County:	Roseau	Average Depth (feet):	
State:	MN	1994 Waste-in-Place (tons):	1,439,112
Year Open:	1973	1998 Waste-in-Place (tons):	1,439,112
Year Closed:	1994		

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d):	0.79
LFG Collection System Status:	
Current LFG Collected (mmscf/d):	
Collection and Treatment System Required Under NSPS/EG:	No

C. LANDFILL GAS UTILIZATION

Current Utilization:

Utilization System Status:	Unknown
Utilization System Type:	Unknown
Utilization System Start Year:	
Electric Utility Provider(s):	
Natural Gas Provider(s):	
Energy Purchaser(s):	

Capacity: Electricity Generation Project (MW) OR Direct Use Project (mmBtu/hr)

Estimated Potential Capacity:	3	25
Current Capacity:		
Planned Capacity:	0.8	9

Utilities in County: North Star Electric Coop Inc; Otter Tail Power Company; Roseau Electric Coop Inc; Roseau Muni Po

D. ENVIROMENTAL BENEFITS OF UTILIZATION

	Potential		Current	
Methane Reduction (tons/yr):	4,545		0	
CO2 Equivalent of CH4 Reduction (tons/yr):	95,441		0	
Emissions Avoided by Fossil Fuel Displacement:	Electricity Generation Project		Direct Use Project	
	CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)
Coal:	19,732	125	13,686	125
Fuel Oil:	16,195	104	11,233	66
Natural Gas:	10,890	0	7,553	0

E. CONTACT INFORMATION

Landfill Owner		Landfill Operator
Contact Name:		Jeff Pelowski, County SW Officer
Mailing Address:		Courthouse Engstrom Twp.
Phone Number:		
Fax Number:		

* Italicized indicates values estimated by EPA.

December 5, 1998

State: MN

Page:

8



A. GENERAL LANDFILL INFORMATION

Landfill Owner:	WMI	Annual Acceptance Rate (tons):	168,630
Landfill Owner Type:		Year Annual Acceptance Rate Reported:	1991
Alternative Landfill Name:		Design Capacity (tons):	3,919,382
City:	Hamel	Acres Currently Landfilled (acres):	85
County:	Hennepin	Average Depth (feet):	
State:	MN	1993 Waste-in-Place (tons):	3,919,382
Year Open:	1971	1998 Waste-in-Place (tons):	3,919,382
Year Closed:	1993		

B. LANDFILL GAS COLLECTION

Estimated Methane Generation (mmscf/d):	1.42
LFG Collection System Status:	Operational
Current LFG Collected (mmscf/d):	
Collection and Treatment System Required Under NSPS/EG:	No

C. LANDFILL GAS UTILIZATION

Current Utilization:			
Utilization System Status:	Operational		
Utilization System Type:	Unknown		
Utilization System Start Year:	1994		
Electric Utility Provider(s):			
Natural Gas Provider(s):			
Energy Purchaser(s):	Northern States Power Co		
Capacity:	Electricity Generation Project (MW)	OR	Direct Use Project (mmBtu/hr)

Estimated Potential Capacity:	4	44
Current Capacity:	4.8	
Planned Capacity:		

Utilities in County:	Anoka Electric Cooperative; Anoka Electric Dept; Elk River Muni Utils; Minnesota Valley Electric C
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D. ENVIROMENTAL BENEFITS OF UTILIZATION

	Potential		Current	
Methane Reduction (tons/yr):	8,213		0	
CO2 Equivalent of CH4 Reduction (tons/yr):	172,465		0	
Emissions Avoided by Fossil Fuel Displacement:	Electricity Generation Project		Direct Use Project	
	CO2 (tons/yr)	SO2 (tons/yr)	CO2 (tons/yr)	SO2 (tons/yr)
Coal:	34,728	220	24,731	225
Fuel Oil:	28,503	184	20,298	118
Natural Gas:	19,166	0	13,649	0

E. CONTACT INFORMATION

	Landfill Owner	Landfill Operator
Contact Name:		
Mailing Address:		
Phone Number:		
Fax Number:		

* Italicized indicates values estimated by EPA.

December 5, 1998

State: MN

Page:

9

