

Closed Landfill Program

2011 Report to the Legislature



Minnesota Pollution Control Agency

December 2011

Legislative Charge

Minn. Statutes § 115b.412, subd. 10 Report

By December 1 of each year, the commissioner shall report to the environment and natural resources committees and to the appropriate finance committees of the Senate and the House of Representatives on the commissioner's activities under sections 115B.39 to 115B.43 and the commissioner's anticipated activities during future fiscal years.

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Executive Summary

The 1994 Landfill Cleanup Act (LCA) created Minnesota's Closed Landfill Program (CLP). The CLP is an alternative to Superfund for cleaning up and maintaining closed landfills and was the first such program in the nation. The CLP is unique because it is the only program that gives the Minnesota Pollution Control Agency (MPCA) the responsibility to "manage" up to 112 closed, state-permitted, mixed-municipal solid waste landfills to mitigate risks to the public and the environment. The CLP manages these sites by:

- monitoring environmental impacts and site conditions associated with each landfill
- determining the risk each landfill poses to public health, safety, and the environment
- implementing remedial response actions to help reduce site risks
- maintaining the landfill properties, the landfill covers, and operating any remedial systems that might be present
- surveying landfill property boundaries and reviewing property records to better understand the land the CLP is responsible for
- working with local governments to incorporate land-use controls at and near the landfills to protect human health and safety, as well as the state's investment involving response actions taken and equipment purchased
- measuring how well the CLP is managing the risk at the landfills

The LCA (Minn. Stat. § 115B.412, subd. 10) requires the MPCA to provide a report to the Minnesota Legislature on the activities of the previous fiscal year (FY) and anticipated future work. This report fulfills the requirement and covers FY 2011 (July 1, 2010, to June 30, 2011) activities.

The report provides detailed information on how the CLP managed the closed landfills in the program during FY 2011. The following pages give an overview of the CLP, discuss program activities that were accomplished in FY 2011, and provide a look ahead to FY 2012.

Program highlights in FY 2011 included:

- completing or continuing remedial response actions at 13 sites
- completing 31 Closed Landfill Use Plans (CLUPs) with local government units
- preventing 24.5 million pounds of methane gas from entering the atmosphere
- capturing nearly 13.7 million gallons of landfill leachate by removing it from, or preventing it from reaching, the groundwater
- supporting new legislation to allow the CLP to remove landfills, or portions of landfill property, from the program to make more land available for other purposes

The CLP spent \$27,792,067 in contractual and administrative costs in FY 2011 to accomplish these and other activities. Future CLP work will require additional steps to manage the risks at these sites by upgrading monitoring systems, landfill covers, and gas systems; conducting investigations; monitoring groundwater and landfill gas impacts; performing land surveys and property records reviews; and working with local governments to implement appropriate land-use controls to protect the public using land at and near the landfills.

Major construction is anticipated in the future at the Koochiching County, Hopkins, Flying Cloud, and Freeway Landfills. It is estimated that it will cost nearly \$82 million to address significant environmental concerns at these four landfills. These four projects will complete the known major construction for the CLP. After which, the CLP anticipates a greater focus on operation and maintenance and long-term land-use-planning activities.

Program Overview

Purpose

The 1994 LCA created Minnesota’s CLP so the state could effectively protect human health, safety and the environment associated with 112 closed, state-permitted, mixed municipal solid waste landfills throughout Minnesota. The program’s goals to help achieve this outcome include managing the risks associated with human exposure to landfill contaminants and methane gas and mitigating the degradation of groundwater and surface water. Managing these risks is best accomplished by implementing certain strategies, including: (1) understanding the extent and magnitude of contaminant and methane gas impacts, as well as the overall risks, at each site; (2) maintaining the landfills and operating any remediation systems; (3) implementing construction-related response actions to reasonably address contaminant and methane gas migration issues; and (4) working with local governments to manage on-site and nearby land use. Table 1 summarizes the CLP’s desired outcome, goals and strategies.

Table 1: Outcome, goals and strategies of the CLP

Desired outcome	Goals	Strategies
Protect human health, safety, and the environment associated with closed landfills	Manage the risk Minimize human exposure to contaminants and methane gas Minimize degradation of groundwater and surface water	Understand extent and magnitude of contamination and methane gas migration Clean up and/or control groundwater contamination Control or reduce methane gas migration Cooperatively manage land use Operate and maintain landfills

The CLP manages the risk to public health and safety in a cyclical fashion referred to as the “Risk Management Cycle.” First, site information pertinent to understanding the risks at each landfill is collected (monitoring groundwater, methane gas, nearby land use) and stored in a database. Second, the CLP evaluates the information, identifies the risks at each site and determines each site’s numerical

Example sign being placed around some CLP landfills



risk using a risk-scoring model, and identifies the most practical response actions needed to lower the risk. Third, response actions are implemented based on several factors, including risk-score ranking, available resources (funds, staff), other required site work (operation and maintenance, land surveys, repairs), and other initiatives that are agency and program priorities (e.g., renewable energy). Fourth, the response actions implemented are measured for effectiveness and the monitoring of site conditions is continued.

How sites enter the CLP

Before landfills are accepted into the CLP, certain requirements as stated in a Landfill Cleanup Agreement or Binding Agreement (BA) – typically executed between landfill owners/operators and the state – must be met. Once these requirements are fulfilled, a Notice of Compliance (NOC) is issued to the owner/operator. At this point, the site enters the program and the state takes over responsibility for the landfill.

Through June 30, 2011, 109 landfill owners/operators had executed a Landfill Cleanup Agreement and received a NOC. Currently, three landfills are qualified for entry into the CLP but have not yet executed a BA. Significant progress has been made in developing a BA for the La Crescent Landfill and a NOC is expected to be issued in FY 2012. However, similar efforts have been challenging regarding the Freeway and Leslie Benson landfills since the LCA does not require a date by which these sites must enter the program. The Freeway Landfill is of particular concern, given its high risk score and past failed efforts to formally enter the site into the CLP. The MPCA is considering appropriate steps to address this situation. Unless new legislation changes landfill entry requirements, the MPCA does not anticipate additional sites to qualify for the CLP. Figure 1 shows the location of all 112 qualified facilities including the three that currently do not have a Landfill Cleanup Agreement.

The LCA also requires the CLP to reimburse eligible parties for past cleanup costs. Past reimbursements to landfill owners, operators and responsible parties total \$37,107,759 while reimbursements to the U.S. Environmental Protection Agency (EPA) amount to \$4,014,550. The Freeway Landfill is the only site that remains eligible for reimbursement to the EPA, at a cost of \$17,000, when it enters the program.

Removing sites from the CLP

New legislation (Minn. Stat. §115B.412, subd. 8) was passed during the 2011 legislative session that allows for the removal or delisting of landfills from the CLP and allows for portions of landfill property to be removed from MPCA responsibility when health and safety measures are met and the land is then available for other uses. Wadena County led the effort to introduce the new law because the county wanted to create a disposal area to accept tornado debris from the city of Wadena. A small portion of the county-owned, closed landfill property – where no remediation systems or groundwater contamination or gas migration issues were located – was carved out of the closed landfill facility and made available to the county to meet its and the city's needs. The CLP may be removing portions of other closed landfill property from the program if local governments or private landowners have unique land-use desires and there will be no impact to the CLP's ability to care for the landfill facility and to protect public health and safety.

Funding

Funding for the CLP comes from three major sources:

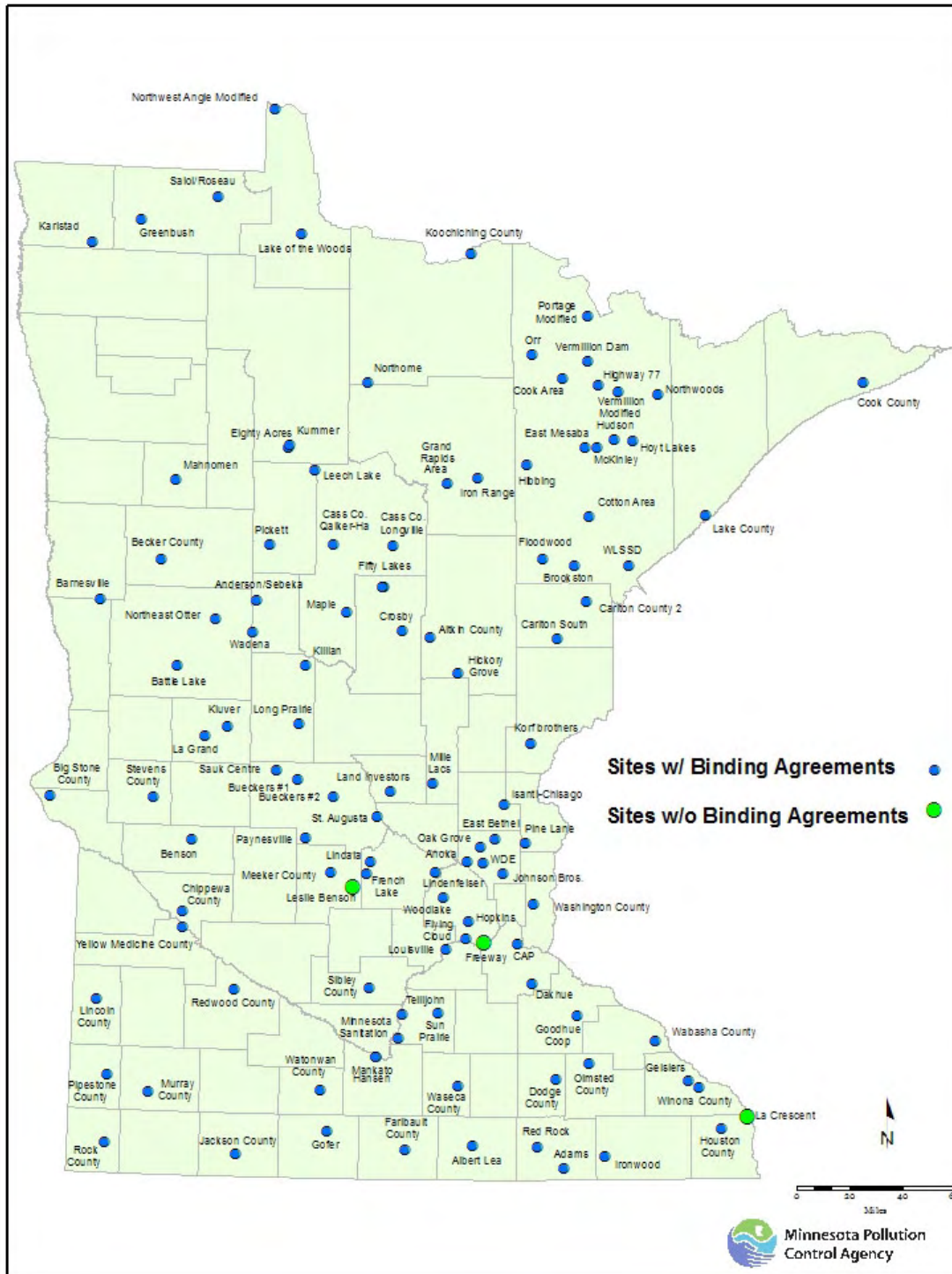
- the Remediation Fund
- general obligation bonds
- settlements from landfill-related insurance coverage

In addition, closed landfills with financial assurance accounts were required to deposit remaining balances into the Remediation Fund to enter the program. Also, the 3M Company has provided the CLP \$8 million for perfluorochemicals (PFC)-related remedies at the Washington County Landfill per the 2007 consent agreement it has with the MPCA.

Transfers from the Environmental Fund

The Environmental Fund is used to support many programs at the MPCA including, in part, the CLP. Various sources of revenue are deposited into the Environmental Fund. A portion of this fund is then transferred into the Remediation Fund for use at CLP sites and for other remediation programs. Minnesota Laws (2009), Ch. 37, Art. 1, sec. 3, subd. 6 required \$40 million to be transferred from the Environmental Fund to the Remediation Fund for the FY 2010–2011 biennium.

Figure 1. Locations of CLP landfills



General obligation bonds

General obligation bonds are used to fund capital improvements, including the construction of remedial systems and the acquisition of land, at publicly owned CLP sites. Since 1994, the Minnesota Legislature has made a number of authorizations of general obligation bonds for these activities at closed landfills, including an initial authorization of \$90 million in 1994. The 1994 authorization was intended to be available long term to meet the future capital needs of the program. However, in 2000, Minn. Stat. § 16A.642 cancelled all unused bonds more than four years old, regardless of program need or legislative intent. As a result, nearly \$56 million of the original \$90 million was cancelled. All authorizations through FY 2011, together with the cancelations, have resulted in a net authorization of over \$102 million of bonds for use at closed landfills. Through FY 2011, more than \$87 million of general obligation bonds has been spent on construction activities and land acquisitions at 51 sites.

Financial assurance

Minn. R. 7035.2665 requires owners of mixed municipal solid waste landfills remaining in operation after July 1, 1990, to set aside funds to pay for the cost of facility closure, postclosure care, and contingency action. Because several of the landfills that entered the CLP were still in operation as of July 1, 1990, their owners were required to meet these financial assurance rules. As part of the LCA, the owners of these landfills, upon entering the CLP, were required to transfer their financial assurance balances to the MPCA after they had met closure requirements.

From inception of the CLP through FY 2011, the state has received a total of \$15,406,837 in financial assurance payments from owners or operators of 25 closed landfills. An additional \$1,781,489 that would have been collected from Waste Management of Minnesota, Inc. for the Anoka-Ramsey Landfill was waived because Waste Management of Minnesota, Inc. agreed to waive its reimbursement claim by an equal amount. Unless legislative changes allow additional sites to qualify for the CLP and transferring remaining financial assurance funds is required, no additional financial assurance dollars are anticipated in the future.

Insurance recovery

The LCA authorizes the MPCA and the Attorney General's office to seek to recover a fair share of the state's landfill cleanup costs from insurance carriers based upon insurance policies issued to responsible persons who are liable for cleanup costs under the state Superfund law. This would include insurance policyholders who owned or operated the landfills, hauled waste containing hazardous substances to the landfills, or arranged for the disposal of waste containing hazardous substances at the landfills. Under the LCA, the MPCA and Attorney General may negotiate coverage settlements directly with insurance carriers. If a carrier has had an opportunity to settle with the state and fails to do so, the state may sue the carrier directly to recover cleanup costs to the extent of the insurance coverage issued to responsible persons.

The state commenced six lawsuits against 56 insurance companies, with assistance from the state's Special Attorneys that had been appointed by the Attorney General's office. The final two lawsuits were settled in FY 2011.

The state's settlement efforts in FY 2011 resulted in global settlements totaling \$11,900,000 with five insurance carriers that had been sued by the state. Global settlements resolve all of an insurance carrier's liability for all of the landfills covered by the 1994 Landfill Cleanup Act. Payments from these settlements, plus from two settlements reached in the prior fiscal year (totaling \$7,771,237), was deposited in the Remediation Fund in FY 2011 after paying the Special Attorneys \$4,129,850. Of the amount the state deposited, \$743,241 was credited to the natural resources damages (NRD) account for the NRD portion of the settlements, \$3,513,998 was transferred to the Closed Landfill Investment Fund, and \$3,513,998 remained in the Remediation Fund. Through FY 2011, the state's share of all insurance

carrier settlements totaled \$96.6 million. Although all settlements have been resolved successfully, some small payments will continue to be credited to the Remediation Fund in the future due to certain insolvent insurance carriers that were party to earlier settlements.

Under the LCA, insurance carriers may request that the state's claims for natural resource damages (NRDs) at any of the landfills in the CLP be included in settlements with the state. NRD payments received in FY 2011 as a result of settlements amounted to \$743,241. Total NRD payments received through June 30, 2011, equal \$9,398,601. Through its Remediation Fund Grants Program, the Minnesota Department of Natural Resources (DNR) uses NRD recoveries to rehabilitate, restore or acquire natural resources to remedy injuries or losses to natural resources resulting from a release of a hazardous substance. No grants were issued in FY 2011.

3M Settlement Agreement and Consent Order

The MPCA executed a Settlement Agreement and Consent Order with the 3M Company (3M) in May 2007, that authorized 3M to take response actions to address releases of PFCs at three disposal sites. As part of this agreement, 3M agreed to provide the MPCA \$8 million for the MPCA's remedial actions at the Washington County Landfill. All \$8 million has been spent through FY 2011.

Aerial view of nearly completed construction at the Washington County Landfill



Closed Landfill Investment Fund

In 1999, the Minnesota Legislature established the Closed Landfill Investment Fund (CLIF) for the purpose of setting aside and investing money for future postclosure care of the CLP landfills. The legislature foresaw the need to plan for a way to fund the state's obligation to care for these landfills in perpetuity. Initially, \$5.1 million was transferred from the former Solid Waste Fund to the CLIF in each of the first four years. In addition, proceeds from settlements with insurance carriers (see Insurance recovery) were deposited equally in the Remediation Fund and the CLIF. The CLIF cannot be used to fund postclosure care activities until after Fiscal Year 2020. During the 2010 legislative session, however, the legislature transferred \$48 million from the CLIF to the General Fund to help address the state's budget shortfall. Legislation requires, however, that \$12 million, plus interest, be transferred back to the CLIF in each of four fiscal years starting in FY 2014. As of June 30, 2011, approximately \$3,695,000 remained in the CLIF.

Program Activities in Fiscal Year 2011

Fiscal Year 2011 expenditures

Program expenditures for FY 2011 totaled \$27,792,067. A summary of these expenditures is found in Table 2. Expenditures for each landfill in FY 2011 are itemized in Appendix A.

Collecting site information

Site risks are evaluated by monitoring groundwater, surface water, and landfill gas migration. Currently, the CLP samples over 2,750 monitoring points comprised of monitoring wells, gas probes and wells, residential wells, surface waters, piezometers and springs. These data are stored in a database referred to as the "Environmental Data Management System." Routine inspections are also conducted at each landfill. Site conditions are observed and items needing repair are noted. In addition, any nearby development that is observed is recorded.

Table 2. CLP expenditures

Expenditure type	FY 2011	Cumulative
Closed Landfill Program Administration and Support	\$2,234,708	\$37,534,252
Remedial Response Actions*	\$14,822,201	\$181,169,539
Operation and Maintenance	\$4,217,091	\$57,411,719
Land Surveys and Property Records Reviews	\$184,435	\$244,865
CLP Legal Counsel (Attorney General)	\$69,521	\$2,393,629
Insurance Recovery Legal Counsel (Attorney General)	\$134,261	\$3,220,882
Insurance Recovery Legal Counsel (Special Attorneys)	\$4,129,850	\$43,030,219
EPA Reimbursement	\$0	\$4,014,550
Responsible Party Reimbursements	\$0	\$37,107,759
Total	\$27,792,067	\$366,127,415

Expenditure information is based on MAPS data for the time period of July 1, 2010, to June 30, 2011.

*These activities include both Bond and non-Bond expenditures.

Understanding and evaluating site risks

Site information that is collected is evaluated to help ascertain risks at each site. Minn. Stat. § 115B.40, subd. 2 requires the MPCA to establish and update a priority list for preventing or responding to releases of hazardous substances, pollutants and contaminants, or decomposition gases at closed landfills. The CLP uses a scoring model to determine risk at each site. Landfills are scored based on hazards present at each site (monitoring data and field observations), the conditions that exacerbate those hazards (example: subsurface conditions), and the likelihood the public will be exposed to those hazards (distance to wells and buildings, population density). Landfills with high risk scores receive a high ranking or priority.

The CLP first scored and ranked the landfills and identified response actions for several of the high-risk sites in late 2009. These response actions ranged from constructing new liners and covers to installing gas vents to implementing CLUPs (see Local land use controls). This list was used, in part, to establish CLP work priorities in FY 2010 and FY 2011. For some landfills, remedial response actions had already been completed and the remedies undertaken were simply monitored for remedy effectiveness. For these sites, risk scores are expected to decrease over time. An updated priority list was developed in September 2011, which will help guide the future work of the CLP (see Table 3).

Not all CLP construction activities are necessarily reflected in this priority list because not all construction is directly risk related. For example, construction may be necessary to replace an aging active gas system, leachate-collection system, or equipment or parts — even at landfills that have a low risk score and ranking.

Response actions taken

Various response actions were taken in FY 2011 to address the risks posed by the closed landfills. These actions included implementing remedial response actions that were focused on reducing risks at the sites and were based on, in part, the risk priority list. Response actions also included operation and maintenance activities at all the landfills.

Cover construction at the East Mesaba Landfill, St. Louis County



Table 3. Site risk priority list (Top 30) – September 2011

Priority ranking	Landfill	Risk score	Initial response action completed or needed to lower risk score	Status
1	Washington County	208250	Complete relocation of waste on site on constructed triple-lined cells and monitor effectiveness of remedy	Ongoing
2	Hopkins	41900	Construct remedy to relocate waste away from adjacent property; construct new cover and gas wells	FY 2012
3	Lindala	25160	Assist county in implementing CLUP	Ongoing
4	WDE	23735	Design and install C3 extraction system at hazardous waste pit	FY 2012
5	Becker County	22581	Complete CLUP to address future land use	FY 2012
6	WLSSD	15500	Monitor effectiveness of waste relocation, upgraded cover and active gas-extraction system	Ongoing
7	Korf Bros.	9640	Install gas probe; Complete CLUP to address future land use	FY 2012
8	Dodge County	8875	Continue gas monitoring; Complete CLUP to address future land use	FY 2012
9	Houston County	7103	Feasibility study to address gas concerns; install additional gas probes	FY 2012
10	East Bethel	6974	Complete CLUP to address future land use	FY 2012
11	Crosby American Properties	6920	Install additional passive gas vents near property boundary	FY 2012
12	Red Rock	6740	Complete groundwater investigation/test pits	FY 2013
13	Freeway	6606	Relocate waste on constructed lined cell or construct new cover and active gas system with waste in place.	No BA
14	Mille Lacs County	5995	Assist county in implementing CLUP	Ongoing
15	Flying Cloud	5725	Upgrade cover and active gas system	FY 2013
16	Isanti-Chisago	5406	Complete CLUP to address future land use	FY 2012
17	Anoka-Ramsey	5284	Complete CLUP to address future land use	FY 2012
18	La Crescent	4910	Install gas probes	No BA
19	Bueckers #1	4790	Update/correct current gas data	Ongoing
20	Salol-Roseau	4760	Install additional gas probes and wells	FY 2012
21	Pine Lane	4685	Complete CLUP to address future land use	FY 2012
22	Maple	4471	Complete CLUP to address future land use	FY 2012
23	Woodlake	4290	Investigate gas migration on north; Install passive gas vents and probes if needed	FY 2012
24	Paynesville	3905	Complete CLUP to address future land use	FY 2012
25	Carlton County No. 2	3754	Complete groundwater investigation	FY 2013
26	Ironwood	3690	Enhance groundwater pumpout	FY 2013
27	Stevens County	3520	Install gas probes near transfer station	FY 2012
28	Louisville	3202	Assist city in implementing CLUP	Ongoing
29	Albert Lea	3126	Monitor effectiveness of waste relocation	Ongoing
30	Koochiching County	3126	Upgrade leachate collection system, cover, and gas system	FY 2012

Remedial response actions

The CLP takes remedial response actions at landfills to help manage the risks – as well as to lower the risk priority scores – at closed landfills. Remedial response actions taken at closed landfills in FY 2011, included groundwater investigations, cover construction, waste consolidation, and installation of active and passive gas systems. Table 4 summarizes these activities and their costs.

The CLP uses contractors to help complete some of these response actions. One contract involves investigation, designing response actions, and providing construction oversight. A second contract is for drilling services.

Turtle at the WLSSD Landfill, St. Louis County



Table 4: Remedial response actions in FY 2011

Landfill	Remedial response action	Expenditures
Albert Lea	Completed construction of lined cell at landfill for relocating waste from nearby city dump and adjacent landfill contaminated soils	\$868,004
Anoka-Ramsey	Completed investigation of waste to determine need for a new active gas system	\$20,905
Crosby American Properties	Installed passive gas vents to address off-site methane migration	\$11,371
East Mesaba	Ongoing construction of new cover, passive gas vents, and incorporating relocated waste	\$2,233,771
Flying Cloud	Initiated design of new cover and waste consolidation	\$87,978
Hopkins	Initiated design of new cover and active gas system	\$100,548
Koochiching County	Ongoing construction of new cover and passive gas system	\$170,676
Maple	Final payment to contractor for upgrade of cover, installation of additional passive gas vents, and improved site access controls	\$1,269
McKinley	Completed relocation of waste to the East Mesaba Landfill	\$20,532
Paynesville	Initiated the relocation of waste from an adjacent unpermitted dump to the landfill	\$712,286
Washington County	Ongoing construction for relocating waste on site into lined cells; ongoing drinking water response actions to address PFCs	\$8,091,309
WDE	Completed pilot of soil vapor/cryogenic extraction system for the hazardous waste pit and began design of permanent system	\$171,901
WLSSD	Completed cover construction and installation of active gas system	\$2,331,652
Total		\$14,822,201

Some of the costs shown are for invoices paid in FY 2011, not necessarily total project costs.

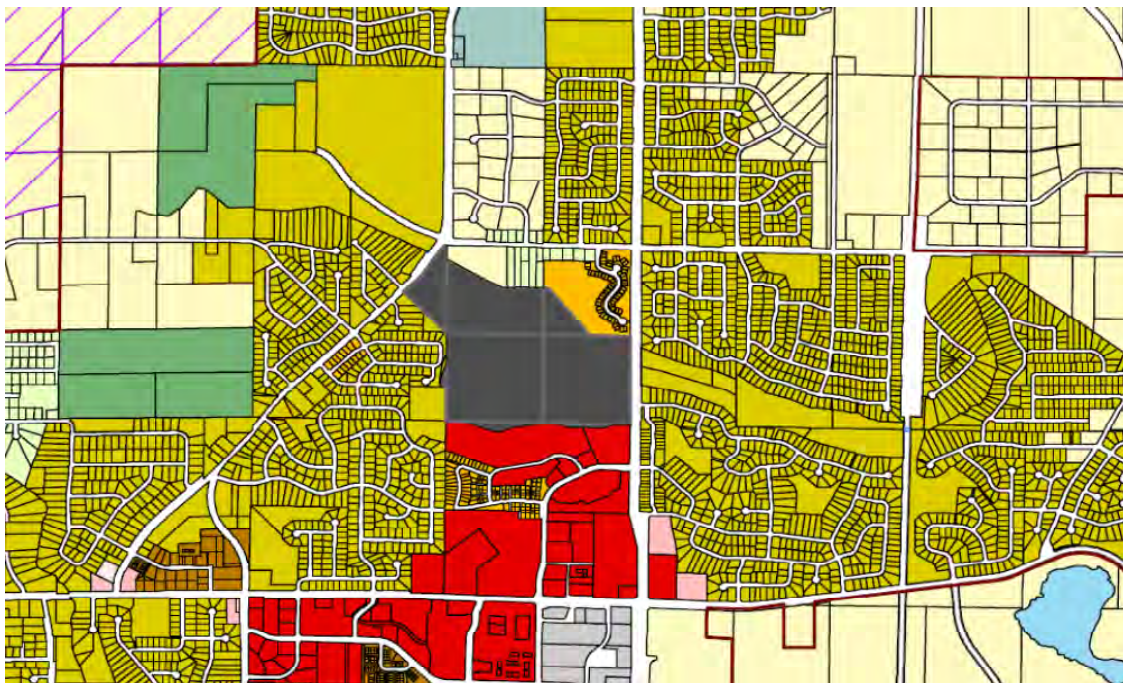
Local land use controls

Managing the risks associated with the closed landfills not only involves cleanup and long-term operation and maintenance, but also managing land use on and near the landfills so that the public living or working nearby can do so in a safe manner. Since it is unlikely that a reasonable cleanup effort will eliminate all the risks associated with a landfill, proper management and regulation of land use at and near a closed landfill is an additional important factor in assuring long-term protection from the risks posed by the facility. Future use of property at and around closed landfills needs to be planned carefully and responsibly.

For each landfill, the MPCA is required to develop a Closed Landfill Use Plan (CLUP) in which the MPCA: (1) determines the appropriate land use at the landfill where the MPCA is implementing environmental response actions; and (2) provides information about property at or near the landfill that may be affected by groundwater and/or surface water contamination and methane gas migration. The purpose of each CLUP is to: (1) protect the health and safety of those living on, or occupying land near, the landfill; and (2) protect the integrity of the landfill and the MPCA's response action equipment.

Minn. Stat. § 115B.412, subd. 9 requires local government units (LGUs) to make their local land use plans consistent with the MPCA's CLUP. The CLP will specifically identify land uses it designates for the property described in the BA, property with adjacent waste, adjacent buffer property, and adjacent property where response-action equipment is operated. The MPCA will recommend that LGUs adopt a new zoning district — "Closed Landfill Restricted" — and ordinance for these properties. Figure 2 shows a portion of an actual city zoning map that depicts the Closed Landfill Restricted District (gray area). The MPCA may recommend zoning allowing for other uses on certain properties depending on the land uses identified and circumstances of the property.

Figure 2. Example Zoning Map Depicting Closed Landfill Restricted District (gray area) – WDE Landfill



Minn. Stat. § 115B.412, subd. 4 (Affected Property Notice) requires the MPCA to provide LGUs with information that describes the types, locations and potential movement of hazardous substances, pollutants and contaminants, or methane gas related to the landfill. LGUs are required to incorporate this information into their land use plans and to notify persons applying for a permit to develop affected

property of the existence of this information and, on request, to provide them a copy of the information. In addition, the MPCA will work with LGUs to identify appropriate land-use controls on affected properties outside the landfill that best protects public health and safety.

In FY 2011, the CLP completed CLUPs at 31 landfills. Through June 30, 2011, 34 CLUPs had been completed.

Cover construction and installation of toe drain at the East Mesaba Landfill, St. Louis County



Operation and maintenance

The MPCA is responsible for the long-term care of all CLP landfills in perpetuity. Depending on the site, operation and maintenance activities include mowing, sampling and analysis, inspections, general repair and maintenance, providing and maintaining alternative water supplies or water-treatment systems, and operation of active gas- and groundwater-treatment systems or gas-to-energy systems. Operation and maintenance costs totaled about \$4.2 million in FY 2011. Costs for each site are provided in Appendix A.

Many of the operation and maintenance activities are performed by firms under contract with the state. One contract is for routine operation and maintenance activities, a second is for sampling and analytical services, a third is for mowing the landfills, and a fourth is for leachate collection and disposal.

Alternative energy opportunities

The CLP occasionally gets involved with opportunities for alternative energy because of two important resources it has at its landfills: methane gas and open space. Two such projects were the focus of the CLP in FY 2011.

Landfill gas can be used as a boiler fuel or to produce electricity. Currently, four Stirling cycle engines that can generate up to 180 kW of electricity (enough to meet the electrical needs of 110 homes) are located at the WDE Landfill in Andover. These engines generated 231,900 kWh of electricity during eight months of operation in FY 2011.

The MPCA and a solar panel contractor entered into a lease agreement in FY 2011 as part of a pilot project at the Olmsted County (Oronoco) Landfill to explore the feasibility of operating solar panels on top of CLP landfills. The lease runs through March 2012, by which time the contractor must begin installation of the 1MW solar panel system.

State ownership of landfills and adjacent property

CLP landfills are owned by local governments, the state, or are privately owned. As of June 30, 2011, the MPCA owned 29 landfills totaling 2,188 acres across Minnesota. Beginning in FY 2011, the CLP took a much closer look at the property records associated with the land in the program. As a result, the CLP found errors in its previous property tracking and reporting efforts. It has since made, and continues to make, corrections. Acreages for each landfill have also been updated to reflect more accurate accounting of acres owned.

Acquiring ownership of landfills was done in cases where state ownership provided the best method of controlling access and to help manage the facility. In many cases, the previous owner of the property transferred title to the MPCA upon entry of the site into the CLP. In other cases, the state acquired title to the land when the property went tax forfeiture. In addition to the landfill property itself, the MPCA has acquired adjacent properties as buffer at 18 sites totaling 490 acres to protect human health and safety. Appendix B provides an updated and complete list of property owned by the state.

In FY 2011, the CLP acquired 5.5 acres of the McKinley Landfill just prior to relocating the waste to the East Mesaba landfill. The CLP is in the process of acquiring title, at no cost, to a number of other landfills in the program. In addition, the CLP is currently working on acquiring property adjacent to the Barnesville and Koochiching landfills as buffer due to waste and/or landfill gas concerns, or for implementing additional response actions.

Land surveys and property records reviews

The CLP made considerable effort in FY 2011 to better understand the landfill property it manages – whether the state owns the land or not. This work consisted of reviewing property records at county offices, identifying parcel information at county assessor's offices, and conducting property boundary surveys. Property boundary surveys assisted the CLP in identifying property lines, addressing property boundary issues with adjacent land owners, describing land for easements, gathering GIS data for mapping purposes, and posting properties at some landfills to help address trespass issues. In FY 2011, the CLP, with the help of surveyors under a land survey contract, conducted county record reviews at 46 landfills and property boundary surveys at five landfills at a total cost of \$184,435.

Helping make land available for useful purposes

As risks at landfills are better understood or are mitigated over time, the CLP realizes that some of the land it has certain responsibilities on (through easements, restrictive covenants, Landfill Cleanup Agreements) is less critical to meet its obligations. At the same time, local governments sometimes have desires for certain land uses on those same properties. When situations like these arise, the CLP will consider reducing some of the land it is responsible for. In FY 2011, per Minn. Stat. § 115B.412, subd. 8, the MPCA released a newly defined parcel for Wadena County's use in its expansion of the adjacent demolition facility, which was necessary to manage the debris from the 2010 tornado.

Measuring progress

The MPCA staff uses environmental and other indicators to measure the progress of the CLP. Currently, two environmental indicators are measured: (1) the volume of landfill leachate that is removed from, or is collected before it has a chance to impact, groundwater; and (2) the amount of landfill gas emissions that are captured and destroyed. Both, if left unabated, have the potential to cause risk to public health and the environment. However, these program measures are currently being evaluated and new measures are being considered that may better reflect the program's overall management of risk at the closed landfills.

Leachate reduction

Landfill leachate is the liquid that has percolated through solid waste. This leachate contains extracted, dissolved or suspended materials from the solid waste. Some of the response actions completed at closed landfills have removed leachate from groundwater or have significantly reduced the amount of leachate from reaching groundwater. Completely eliminating leachate generation at unlined landfills is impossible given current

View from atop the Pipestone County Landfill



technology, knowledge and economics. However, several activities can be done to reduce the amount of leachate each landfill generates, thereby minimizing the potential impact leachate can have on groundwater. Those activities include relocating poorly covered waste and waste originally placed in or near groundwater, reducing waste footprints, placing impermeable covers over waste, and collecting and treating leachate and contaminated groundwater. In certain situations, although expensive, constructing a bottom liner and relocating the waste on top of that liner can provide the greatest safeguard to protecting public health and the environment. To date, waste placement on a complete or partial bottom liner system has been completed at the Mille Lacs County, Washington County, and Winona County Landfills.

Improved or synthetic covers greatly reduce the infiltration of precipitation into the waste, thereby reducing the volume of leachate produced. The CLP has implemented cover enhancements at over 50 closed landfills since inception of the program.

The CLP also re-contours landfill surfaces, establishes vegetative growth on landfill covers, and constructs holding basins to further reduce the amount of surface water likely to come into contact with waste and form leachate. The CLP also operates 10 leachate-collection systems and six groundwater-collection systems at 16 sites. These systems prevented an estimated 13.7 million gallons of leachate from reaching, or remaining in, the groundwater in FY 2011 (see Table 5).

Table 5. Volume of leachate prevented from reaching or remaining in groundwater in FY 2011

Landfill	Type of system	Volume pumped (gallons)	% Leachate	Leachate (gallons)
Albert Lea	Leachate collection	306,000	100	306,000
Anoka – Ramsey	Groundwater treatment	117,601,035	1	1,176,010
Becker County	Groundwater treatment	138,529,929	1	1,385,299
Cook County	Leachate collection	43,000	100	43,000
East Bethel	Groundwater treatment	22,218,515	1	222,185
Isanti – Chisago	Groundwater treatment	7,569,038	1	75,690
Ironwood	Groundwater treatment	15,811,880	1	158,119
Koochiching County	Leachate collection	0	0	0
Mille Lacs County	Leachate collection	47,000	100	47,000
Northeast Otter Tail County	Leachate collection	12,000	100	12,000
Olmsted County	Leachate collection	1,120,000	100	1,120,000
Washington County	Leachate collection	6,328,133	100	6,328,133
WDE	Groundwater treatment	36,066,376	4	1,442,655
Winona County	Leachate collection	510,000	100	510,000
WLSSD	Leachate collection	12,826,000	2	256,520
Woodlake	Leachate collection	599,282	100	599,282
TOTAL				13,681,894

Landfill gas reduction

Landfill gas, primarily methane, is a concern with closed landfills because: (1) it can migrate off site and become an explosive hazard; and (2) it is a greenhouse gas. Methane is generated as landfill waste decomposes and needs to be managed because it accumulates beneath the landfill cover. Currently, most landfills in the CLP have some type of passive gas-extraction system that helps alleviate methane buildup.

It is not currently possible to totally eliminate landfill gas escaping to the environment. However, installation of active gas-collection systems at larger sites can significantly reduce landfill gas emissions directly to the atmosphere. In FY 2011, 21 landfills had active gas-extraction systems or flares in operation. The active gas system at the Koochiching County Landfill was permanently decommissioned due to the lack of landfill gas to operate a flare efficiently. Also, the active gas system at the Washington County Landfill was temporarily decommissioned due to construction activities and did not begin operating until late FY 2011. The WDE Landfill addresses gas issues by both a flare and gas-to-energy system (see Alternative energy opportunities). The solar-powered, single-vent flare at the Kummer Landfill that destroys methane is unique.

Active landfill gas-extraction systems and flares provide the following beneficial uses:

- reduction in methane migration and vegetative loss
- overall reduction in greenhouse gases
- reduction of volatile organic compounds that would otherwise migrate to groundwater
- gas-to-energy use

In FY 2011, over 24.5 million pounds of methane were destroyed by the gas-extraction and gas-to-energy systems that are operated at CLP landfills (see Table 6). Since 2000, these systems have prevented about 286 million pounds of methane (2.72 million metric tons of carbon dioxide equivalents) from entering the atmosphere. Stack test results from earlier studies generally show greater than 99 percent destruction of methane and other contaminants in the CLP's enclosed flares.

Table 6. Methane destroyed by gas-extraction and gas to-energy systems in FY 2011

Landfill	Gas flow (cfm)	% Methane in landfill gas	Operation hours	Methane destroyed (lb)
Albert Lea	124	49	7,042	1,146,999
Anoka-Ramsey	225	40	8,560	2,047,207
Becker County	60	35	3,164	176,118
Dakhue	90	26	6,971	439,688
East Bethel	80	32	8,587	580,370
Flying Cloud	466	46	8,448	4,844,303
Grand Rapids	88	34	5,544	448,271
Hopkins	96	30	4,258	326,935
Kummer (solar flare)**	3	43	8,322	28,697
Lindenfelser	71	40	8,409	630,095
Louisville	251	47	7,942	2,529,225
Oak Grove	82	52	8,255	944,050
Olmsted	131	47	7,299	1,210,309
Pine Lane	111	43	7,685	979,395
St. Augusta	75	37	7,625	566,826
Tellijohn	121	27	6,853	603,591
Washington County*	150	52	526	110,025
Watonwan County	62	51	3,444	293,714
WDE (flare)	95	49	8,693	1,087,628
WDE (gas-to-energy engines)**	28	49	3,888	144,914
Winona County	81	54	4,262	498,418
WLSSD*	452	61	48	35,184
Woodlake	412	50	8,751	4,858,619
TOTAL				24,530,580

*System temporarily shut down for construction

**Estimated

Gas vent and flower at the Murray County Landfill

Future measurements

Additional environmental and program measurements are being considered for the future. For example, using its GIS database, the CLP can now track changes in acreage of each landfill's groundwater plume, as well as the groundwater and methane gas areas of concern. In addition, the CLP is considering tracking the amount of impacted land (in acres) that becomes subject to local land use controls that protect public health and safety as well as land returned to productive use. This will provide the program a way to measure how well its response actions are affecting the size of the environmental impacts from the landfills while, at the same time, measure how well the public's exposure to these impacts via land use is being managed.



Looking Ahead to FY 2012

Anticipated new projects

In FY 2012, the CLP will implement response actions at sites with high risk priority scores and to repair or upgrade existing remedial and monitoring systems. Table 7 lists the anticipated response actions at specific landfills, assuming funding is available. Additional activities for FY 2012 include ongoing water/whole-house filter services to residents near the Washington County, Becker County, Kluver, Lindala, and Mille Lacs County landfills.

Laying synthetic cover over drainage layer at the East Mesaba Landfill, St. Louis County



Table 7. Anticipated response actions for FY 2012

Landfill	Response action
Anoka-Ramsey	Complete CLUP to address future land use; Upgrade groundwater treatment and active gas systems
Becker County	Complete CLUP to address future land use
Brookston Area	Install passive gas vents
Crosby American Properties	Install additional gas vents near property boundary to address methane migration
Dodge County	Complete CLUP to address future land use
East Bethel	Complete CLUP to address future land use
East Mesaba	Complete waste consolidation and cover construction
Eighty Acres	Complete CLUP to address future land use
Floodwood	Install passive gas vents
Flying Cloud	Begin construction of new cover and active gas extraction system
Hopkins	Design and begin constructing remedy to relocate waste away from adjacent property; Upgrade cover and active gas system
Houston County	Feasibility study to address gas; Install additional gas probes
Isanti-Chisago	Complete CLUP to address future land use
Kluver	Complete CLUP to address future land use; surface water drainage and cover repair
Koochiching County	Continue upgrade of leachate collection system, cover, and convert active gas extraction system to a passive gas system
Korf Bros.	Install gas probe; Complete CLUP to address future land use
Kummer	Complete CLUP to address future land use
La Grand	Complete CLUP to address future land use
Lindala	Assist county with CLUP implementation
Louisville	Assist city with CLUP implementation
Maple	Complete CLUP to address future land use
Mille Lacs County	Assist county with CLUP implementation
Oak Grove	Conduct a surface water investigation
Paynesville	Complete waste relocation from adjacent dump; Complete CLUP to address future land use
Pine Lane	Complete CLUP to address future land use
Red Rock	Groundwater investigation
Salol-Roseau	Install additional gas probes and monitoring wells
Stevens County	Install gas probes to address methane migration concerns
Washington County	Complete waste relocation remedy
WDE	Complete installation of a cryogenic vapor extraction system and begin pilot of carbon treatment system at hazardous waste pit
WLSSD	Complete Phase II construction to relocate/consolidate waste, upgrade cover and active gas-extraction system
Woodlake	Install gas probes to investigate methane migration

Additional Information

Additional information about the CLP, including landfill-specific information, can be found on the MPCA's website at <http://www.pca.state.mn.us/cleanup/landfill-closed.html>.

Program Contacts

For more information about the CLP, contact:

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- **Doug Day**, Unit Supervisor, Closed Landfill Program, 651-757-2302, 800-657-3864
- **Jeff Lewis**, Section Manager, Closed Landfill and Superfund Programs, 651-757-2529, 800-657-3864

Appendix A: Fiscal Year 2011 site costs

Landfill Name	MPCA Salary and Expenses	Attorney General Support	Operation and Maintenance	Design / Construction	Land Survey and Property Records Reviews	Landfill Totals
Adams (Relocated)	\$ 87	\$ 0	\$ 0	\$ 0	\$ 2,003	\$ 2090
Aitkin Area	\$ 2,674	\$ 0	\$ 12,804	\$ 0	\$ 0	\$ 15478
Albert Lea	\$ 9,341	\$ 7,980	\$ 188,307	\$ 868,004	\$ 1,622	\$ 1,075,254
Anderson-Sebeka	\$ 2,046	\$ 0	\$ 1,209	\$ 0	\$ 0	\$ 3,255
Anoka-Ramsey	\$ 13,229	\$ 14,421	\$ 374,022	\$ 20,905	\$ 0	\$ 422577
Barnesville	\$ 2,501	\$ 9,291	\$ 21,720	\$ 0	\$ 1,005	\$ 34,517
Battle Lake	\$ 1,714	\$ 0	\$ 5,679	\$ 0	\$ 0	\$ 7,393
Becker County	\$ 7,748	\$ 2,337	\$ 130,353	\$ 0	\$ 0	\$ 140,438
Benson	\$ 2,067	\$ 3,751	\$ 6,962	\$ 0	\$ 0	\$ 12,780
Big Stone County	\$ 4,136	\$ 0	\$ 10,691	\$ 0	\$ 0	\$ 14,827
Brookston Area	\$ 786	\$ 0	\$ 1,595	\$ 0	\$ 0	\$ 2,381
Bueckers #1	\$ 1,416	\$ 0	\$ 1,814	\$ 0	\$ 0	\$ 3230
Bueckers #2 (Relocated)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Carlton County #2	\$ 5,483	\$ 11	\$ 8,238	\$ 0	\$ 3,699	\$ 17431
Carlton County South	\$ 1,899	\$ 1,174	\$ 1,783	\$ 0	\$ 450	\$ 5306
Cass County (L-R)	\$ 1,091	\$ 0	\$ 2,203	\$ 0	\$ 0	\$ 3294
Cass County (W-H)	\$ 1,954	\$ 0	\$ 3,370	\$ 0	\$ 0	\$ 5324
Chippewa County	\$ 5,124	\$ 0	\$ 11,559	\$ 0	\$ 0	\$ 16683
Cook Area	\$ 1,185	\$ 0	\$ 2,578	\$ 0	\$ 0	\$ 3763
Cook County	\$ 2,898	\$ 34	\$ 27,171	\$ 0	\$ 2,364	\$ 32467
Cotton Area	\$ 719	\$ 0	\$ 1,922	\$ 0	\$ 0	\$ 2641
Crosby	\$ 4,913	\$ 0	\$ 4,067	\$ 0	\$ 1,916	\$ 10896
Crosby American Properties	\$ 4,805	\$ 1,243	\$ 26,855	\$ 11,371	\$ 0	\$ 44274
Dakhue	\$ 4,447	\$ 2,804	\$ 75,366	\$ 0	\$ 0	\$ 82617
Dodge County	\$ 3,310	\$ 0	\$ 10,386	\$ 0	\$ 3,274	\$ 16970
East Bethel	\$ 8,591	\$ 137	\$ 203,921	\$ 0	\$ 0	\$ 212649
East Mesaba	\$ 38,621	\$ 3,044	\$ 9,984	\$ 2,233,771	\$ 46	\$ 2285466
Eighty Acre	\$ 5,709	\$ 103	\$ 46,784	\$ 0	\$ 0	\$ 52596
Faribault County	\$ 2,376	\$ 0	\$ 12,185	\$ 0	\$ 1,282	\$ 15843
Fifty Lakes	\$ 2,822	\$ 0	\$ 2,766	\$ 0	\$ 0	\$ 5588
Floodwood	\$ 687	\$ 0	\$ 2,138	\$ 0	\$ 0	\$ 2825
Flying Cloud	\$ 10,808	\$ 9,451	\$ 19,229	\$ 87,978	\$ 0	\$ 127466
Freeway (No BA)	\$ 12,414	\$ 2,120	\$ 0	\$ 0	\$ 0	\$ 14534
French Lake	\$ 5,518	\$ 433	\$ 2,403	\$ 0	\$ 11,583	\$ 19937
Geislers (Relocated)	\$ 22	\$ 34	\$ 0	\$ 0	\$ 5,314	\$ 5370
Gofer	\$ 3,343	\$ 0	\$ 12,597	\$ 0	\$ 1,306	\$ 17246
Goodhue Co-Op	\$ 926	\$ 194	\$ 6,742	\$ 0	\$ 2,502	\$ 10364
Grand Rapids	\$ 4,567	\$ 0	\$ 74,123	\$ 0	\$ 0	\$ 78690
Greenbush (Relocated)	\$ 606	\$ 23	\$ 0	\$ 0	\$ 0	\$ 629
Hansen	\$ 1,069	\$ 0	\$ 4,187	\$ 0	\$ 1,292	\$ 6548
Hibbing	\$ 1,592	\$ 0	\$ 4,841	\$ 0	\$ 0	\$ 6433
Hickory Grove	\$ 2,352	\$ 171	\$ 39,921	\$ 0	\$ 0	\$ 42444
Highway 77	\$ 563	\$ 0	\$ 210	\$ 0	\$ 0	\$ 773
Hopkins	\$ 8,705	\$ 194	\$ 78,235	\$ 100,548	\$ 3,040	\$ 190722
Houston County	\$ 1,857	\$ 103	\$ 12,778	\$ 0	\$ 3,778	\$ 18516
Hoyt Lakes	\$ 903	\$ 0	\$ 420	\$ 0	\$ 0	\$ 1323
Hudson	\$ 975	\$ 0	\$ 12,694	\$ 0	\$ 0	\$ 13669
Iron Range	\$ 1,695	\$ 0	\$ 10,526	\$ 0	\$ 0	\$ 12221
Ironwood	\$ 4,695	\$ 0	\$ 116,026	\$ 0	\$ 2,814	\$ 123535
Isanti-Chisago	\$ 7,783	\$ 2,155	\$ 77,676	\$ 0	\$ 0	\$ 87614
Jackson County	\$ 1,486	\$ 0	\$ 8,110	\$ 0	\$ 1,264	\$ 10860
Johnson Bros.	\$ 1,012	\$ 0	\$ 3,269	\$ 0	\$ 0	\$ 4281

Landfill Name	MPCA Salary and Expenses	Attorney General Support	Operation and Maintenance	Design / Construction	Land Survey and Property Records Reviews	Landfill Totals
Karlstad	\$ 1,501	\$ 0	\$ 2,700	\$ 0	\$ 0	\$ 4201
Killian	\$ 7,694	\$ 0	\$ 17,222	\$ 0	\$ 0	\$ 24916
Kluver	\$ 7,367	\$ 10,921	\$ 38,734	\$ 0	\$ 0	\$ 57022
Koochiching County	\$ 24,037	\$ 91	\$ 98,348	\$ 170,676	\$ 1,220	\$ 294372
Korf Bros.	\$ 2,504	\$ 57	\$ 4,969	\$ 0	\$ 1,941	\$ 9471
Kummer	\$ 3,655	\$ 68	\$ 14,445	\$ 0	\$ 0	\$ 18168
La Crescent (No BA)	\$ 1,440	\$ 353	\$ 0	\$ 0	\$ 3,807	\$ 5600
La Grand	\$ 2,662	\$ 91	\$ 3,003	\$ 0	\$ 0	\$ 5756
Lake County	\$ 1,407	\$ 0	\$ 18,900	\$ 0	\$ 2,364	\$ 22671
Lake of The Woods County	\$ 826	\$ 0	\$ 23,786	\$ 0	\$ 0	\$ 24612
Land Investors (Relocated)	\$ 962	\$ 0	\$ 2,484	\$ 0	\$ 0	\$ 3446
Leech Lake	\$ 1,342	\$ 0	\$ 3,269	\$ 0	\$ 92	\$ 4703
Leslie Benson (No BA)	\$ 734	\$ 205	\$ 0	\$ 0	\$ 1,203	\$ 2142
Lincoln County (Relocated)	\$ 130	\$ 0	\$ 0	\$ 0	\$ 1,277	\$ 1407
Lindala	\$ 7,408	\$ 0	\$ 29,865	\$ 0	\$ 46	\$ 37319
Lindenfelser	\$ 3,969	\$ 91	\$ 67,503	\$ 0	\$ 2,579	\$ 74142
Long Prairie	\$ 1,866	\$ 11	\$ 5,287	\$ 0	\$ 0	\$ 7164
Louisville	\$ 4,642	\$ 3,602	\$ 79,907	\$ 0	\$ 0	\$ 88151
Mahnomen County	\$ 1,574	\$ 0	\$ 378	\$ 0	\$ 0	\$ 1952
Mankato	\$ 1,596	\$ 0	\$ 5,321	\$ 0	\$ 1,292	\$ 8209
Maple	\$ 13,150	\$ 23	\$ 64,268	\$ 1,269	\$ 0	\$ 78710
McKinley (Relocated)	\$ 2,788	\$ 7,889	\$ 4,971	\$ 20,532	\$ 0	\$ 36180
Meeker County	\$ 1,074	\$ 0	\$ 14,208	\$ 0	\$ 3,409	\$ 18691
Mille Lacs County	\$ 18,426	\$ 0	\$ 75,250	\$ 0	\$ 2,188	\$ 95864
Minnesota Sanitation	\$ 2,584	\$ 0	\$ 4,728	\$ 0	\$ 2,041	\$ 9353
Murray County	\$ 1,803	\$ 0	\$ 7,914	\$ 0	\$ 1,288	\$ 11005
Northeast Otter Tail	\$ 2,595	\$ 0	\$ 47,909	\$ 0	\$ 0	\$ 50504
Northome	\$ 1,795	\$ 0	\$ 1,672	\$ 0	\$ 0	\$ 3467
Northwest Angle	\$ 1,008	\$ 0	\$ 989	\$ 0	\$ 0	\$ 1997
Northwoods	\$ 792	\$ 0	\$ 5,317	\$ 0	\$ 0	\$ 6109
Oak Grove	\$ 2,784	\$ 0	\$ 64,556	\$ 0	\$ 0	\$ 67340
Olmsted County	\$ 15,179	\$ 2,953	\$ 165,074	\$ 0	\$ 4,020	\$ 187226
Orr	\$ 3,465	\$ 0	\$ 0	\$ 0	\$ 0	\$ 3465
Paynesville	\$ 17,574	\$ 0	\$ 2,565	\$ 712,286	\$ 0	\$ 732425
Pickett	\$ 5,909	\$ 80	\$ 7,754	\$ 0	\$ 9,088	\$ 22831
Pine Lane	\$ 3,008	\$ 0	\$ 118,779	\$ 0	\$ 2,937	\$ 124724
Pipestone County	\$ 1,774	\$ 0	\$ 10,408	\$ 0	\$ 1,304	\$ 13486
Portage Mod. (Relocated)	\$ 152	\$ 0	\$ 0	\$ 0	\$ 0	\$ 152
Red Rock	\$ 7,750	\$ 23	\$ 27,980	\$ 0	\$ 16,244	\$ 51997
Redwood County	\$ 3,064	\$ 0	\$ 12,541	\$ 0	\$ 1,302	\$ 16907
Rock County	\$ 2,256	\$ 0	\$ 10,951	\$ 0	\$ 1,273	\$ 14480
Salo/Roseau	\$ 1,238	\$ 0	\$ 10,656	\$ 0	\$ 0	\$ 11894
Sauk Centre	\$ 2,156	\$ 0	\$ 2,822	\$ 0	\$ 0	\$ 4978
Sibley County	\$ 3,575	\$ 0	\$ 9,826	\$ 0	\$ 1,253	\$ 14654
St. Augusta	\$ 7,115	\$ 3,317	\$ 69,807	\$ 0	\$ 0	\$ 80239
Stevens County	\$ 1,870	\$ 0	\$ 7,683	\$ 0	\$ 0	\$ 9553
Sun Prairie	\$ 1,664	\$ 0	\$ 9,991	\$ 0	\$ 1,921	\$ 13576
Tellijohn	\$ 4,479	\$ 0	\$ 94,670	\$ 0	\$ 2,458	\$ 101607
Vermillion Dam (Relocated)	\$ 130	\$ 0	\$ 0	\$ 0	\$ 0	\$ 130
Vermillion Modified	\$ 1,018	\$ 0	\$ 630	\$ 0	\$ 0	\$ 1648
Wabasha County	\$ 1,544	\$ 0	\$ 16,254	\$ 0	\$ 3,508	\$ 21306
Wadena County	\$ 18,926	\$ 5,073	\$ 22,358	\$ 0	\$ 22,797	\$ 69154
Waseca County	\$ 3,928	\$ 0	\$ 34,254	\$ 0	\$ 501	\$ 38683
Washington County	\$ 79,748	\$ 285	\$ 219,097	\$ 8,091,309	\$ 3,609	\$ 8394048

Landfill Name	MPCA Salary and Expenses	Attorney General Support	Operation and Maintenance	Design / Construction	Land Survey and Property Records Reviews	Landfill Totals
Watonwan County	\$ 4,546	\$ 0	\$ 61,831	\$ 0	\$ 1,341	\$ 67718
Waste Disposal Eng (WDE)	\$ 27,803	\$ 331	\$ 401,296	\$ 171,901	\$ 0	\$ 601331
Winona County	\$ 12,361	\$ 502	\$ 138,467	\$ 0	\$ 9,438	\$ 160768
WLSSD	\$ 57,452	\$ 18,844	\$ 144,129	\$ 2,331,652	\$ 5,367	\$ 2557444
Woodlake	\$ 5,402	\$ 935	\$ 201,934	\$ 0	\$ 184	\$ 208455
Yellow Medicine County	\$ 2,558	\$ 0	\$ 10,707	\$ 0	\$ 0	\$ 13265
Administration and Support	\$ 1,593,683	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1,593,683
TOTAL	\$ 2,234,708	\$ 69,521*	\$ 4,217,091	\$ 14,822,201	\$ 184,435	\$ 19223727

*Attorney General Support costs do not include Attorney General and Special Attorney costs associated with insurance recovery.

Appendix B: State ownership of landfills and adjacent property

Site Name	County	Landfill Acres	Buffer Acres
Anderson/Sebeka	Wadena	27.1	
Anoka/Ramsey	Anoka	245.7	32.0
Bueckers #1	Stearns	30.8	
Dakhue	Dakota	79.8	
East Bethel	Anoka	58.3	0.3
East Mesaba	St. Louis	226.5	
French Lake	Wright	11.0	69.0
Isanti-Chisago	Isanti	64.3	
Kluver	Douglas	21.4	7.4
Kummer	Beltrami		9.1
La Grande	Douglas	70.4	
Land Investors, Inc.	Benton	8.6	
Leech Lake	Hubbard	66.2	16.5
Lindala	Wright	40.0	20.0
Lindenfelser	Wright	61.7	12.1
Long Prairie	Todd	28.0	99.6
McKinley	St. Louis	5.5	
Oak Grove	Anoka	148.8	1.2
Olmsted	Olmsted	252.0	46.9
Paynesville	Stearns	75.9	
Pickett	Hubbard	16.2	3.8
Pine Lane	Chisago	45.7	19.4
Pipestone	Pipestone	40.0	
Red Rock	Mower	79.7	80.5
Salol-Roseau	Roseau	101.6	
Sauk Centre	Stearns	10.8	3.2
St. Augusta	Stearns	70.8	43.0
Sun Prairie	Le Sueur	80.3	
Wabasha County	Wabasha	29.0	
Washington County	Washington		20.1
WDE	Anoka		5.5
Woodlake	Hennepin	192.2	
Total		2,188.3	489.6