

KEEP PENNSYLVANIA BEAUTIFUL

Statewide Illegal Dumping Cost Research

FINAL REPORT

August 2014



MSW CONSULTANTS

MidAtlantic Solid Waste Consultants

11875 High Tech Avenue, Suite 150, Orlando, FL 32817 (800) 679-9220

www.mswconsultants.com



This report was delivered electronically. If it is necessary to print hard copies, please do so on post-consumer recycled paper and recycle.

ACKNOWLEDGEMENTS

MSW Consultants would like to thank the following organizations for their assistance with this project.

- ◆ Allegheny CleanWays
- ◆ Allegheny County Health Department
- ◆ Berks County Solid Waste Authority
- ◆ Blair County Intermunicipal Relations Committee
- ◆ Centre County Recycling and Refuse Authority
- ◆ City of Harrisburg Community Action Commission
- ◆ City of Lancaster Bureau of Solid Waste and Recycling
- ◆ City of Pittsburgh Public Works
- ◆ Clearfield County Planning & Community Development
- ◆ Clinton County CleanScapes, Inc.
- ◆ Clinton County Solid Waste Authority
- ◆ Greater Lebanon Refuse Authority
- ◆ Keep Allentown Beautiful
- ◆ Keep Bradford County Beautiful
- ◆ Keep Bucks County Beautiful
- ◆ Keep Cambria County Beautiful
- ◆ Keep Huntingdon County Beautiful
- ◆ Keep Juniata County Beautiful
- ◆ Keep Lancaster County Beautiful
- ◆ Keep Perry County Beautiful
- ◆ Keep York County Beautiful
- ◆ Monroe County Municipal Waste Management Authority
- ◆ PA CleanWays of Cumberland County
- ◆ PA CleanWays of Elk County
- ◆ PA CleanWays of Fayette County
- ◆ PA CleanWays of McKean County
- ◆ PA CleanWays of Mifflin County
- ◆ PA CleanWays of Venango County
- ◆ PA DEP - Altoona District Office
- ◆ Pennsylvania Environmental Council
- ◆ Pennsylvania Resources Council, Inc.
- ◆ Tri-County CleanWays
- ◆ Westmoreland CleanWays

This study would not have been successful without their cooperation and support. We would also like to extend a special thank you to the staff of Keep Pennsylvania Beautiful for their efforts at answering our questions and providing highly detailed financial and operational metrics from several internal data management systems.

Keep Pennsylvania Beautiful would like to acknowledge and thank the Richard King Mellon Foundation, the Pennsylvania Department of Environmental Protection, and the Keep Pennsylvania Beautiful Business Council for providing financial support for this project.

ACKNOWLEDGEMENTS

This page intentionally left blank.

TABLE OF CONTENTS

1. INTRODUCTION..... 1

2. APPROACH..... 1

3. RESULTS..... 2

 3.1 Metrics 2

 3.2 Findings 3

4. CONCLUSIONS..... 4

List of Tables

Table 2-1 Survey Coverage..... 2

Table 3-1 Hourly Rates Used to Project Total Costs..... 3

Table 3-2 Summary of Reported Cleanup Data (Annual Average, 2010-12) 3

Appendix A – Survey Questionnaire

TABLE OF CONTENTS

This page intentionally left blank.

STATEWIDE ILLEGAL DUMPING COST RESEARCH

1. INTRODUCTION

Keep Pennsylvania Beautiful (KPB) has recently completed the Statewide Illegal Dump Survey Program (2005-2013). Through this program, KPB identified more than 6,200 illegal dumpsites across Pennsylvania. At the conclusion of this multi-year initiative, the organization is working to identify a strategy to significantly reduce illegal dumping in Pennsylvania. In an effort to build a strong case for further action by state, county, local government and other stakeholders to significantly reduce illegal dumping in Pennsylvania, Keep Pennsylvania Beautiful is performing a series of research initiatives in 2013 and 2014:

- ◆ Illegal Dumping Cost Assessment,
- ◆ Analysis of Illegal Dump Survey and Recommendations to Reduce Illegal Dumping,
- ◆ Literature Review of Economic Impacts of Blight on Communities, and
- ◆ Public Opinion Poll.

This report presents the results of the first initiative, a survey of illegal dumping-related costs incurred by local governments and nonprofit organizations across the Commonwealth.

2. APPROACH

KPB retained MSW Consultants to perform the illegal dumping cost research. Broadly, this research consisted of systematically contacting county and city illegal dumping stakeholders across Pennsylvania, and compiling both out-of-pocket expenses and in-kind contributions (both supplies/services and volunteer time) applied to illegal dumping-related education, clean-up and enforcement. KPB's internal financial reporting systems and the illegal dumpsite database were also summarized as part of the project. The project included the following tasks:

- ◆ **Confirming Illegal Dumping Stakeholders to be Targeted for the Research Effort:** MSW Consultants and KPB collaborated on the list of stakeholders, which were primarily associated with local KPB affiliates; local affiliates of national KPB parent Keep America Beautiful (KAB); and individual county solid waste and recycling departments, conservation districts and planning commissions.
- ◆ **Develop Research Questions:** MSW Consultants, with input from KPB, developed a broad list of questions and talking points for the research effort. A copy of the list of questions is included in Appendix A. It should be noted that it was never the intent, nor would it have been possible, to answer every question with every stakeholder. Rather, the question list was used to prompt discussion about major illegal dumping costs.
- ◆ **Performance of Research Surveys:** Over a four month period, MSW Consultants systematically contacted and attempted to survey each targeted stakeholder. While this report uses the term "survey," in practice the process more closely resembled a series of conversations between MSW Consultants and targeted stakeholders to (a) review results of KPB's Illegal Dump Site Survey Program for their county or city, (b) discuss the level of effort expended by the stakeholder in education, remediation and enforcement, and (c) systematically compile the direct expenses and in-kind services and volunteer time applied towards illegal dumping (but excluding other activities like litter removal, recycling education, and related initiatives). Because of the variety of accounting methods used by responding stakeholders, it was frequently necessary to rely on "educated estimate" inputs and feedback from knowledgeable sources. MSW Consultants believes the respondents were

STATEWIDE ILLEGAL DUMPING COST RESEARCH

reasonably able to quantify illegal dumping-related costs, although a number of simplifying assumptions were made in the process. Table 2-1 summarizes the counties covered as a result of the survey efforts.¹

Table 2-1 Survey Coverage

Allegheny County	Dauphin County	McKean County
Berks County	Fayette County	Mercer County
Blair County	Huntingdon County	Mifflin County
Bradford County	Juniata County	Monroe County
Bucks County	Lackawanna County	Perry County
Butler County	Lancaster County	Susquehanna County
Centre County	Lawrence County	Venango County
Clearfield County	Lebanon County	Westmoreland County
Clinton County	Luzerne County	Wyoming County
Cumberland County	Lycoming County	York County

Analysis of Responses: MSW Consultants reviewed all responses for comprehensiveness and consistency, and calculated unit costs for illegal dumping to test for reasonableness. The remainder of this report summarizes the findings of the research.

3. RESULTS

At the outset of the research, it was determined to seek illegal dumping cost data for the time period of CY2010 through CY2012, or a total of three years. This time period was established because it was the most recent period for which KPBP had complete illegal dump clean-up event data. Clean-up events recorded by KPBP were used as a starting point for researching costs with stakeholders.

3.1 METRICS

The following data were compiled as part of the study:

- ◆ **No. of Clean-ups:** Reflects the number of clean-ups recorded by KPBP plus any additional clean-ups identified by the respondents over and above the number identified by KPBP.
- ◆ **Tons:** The tonnage reported in this study was pulled from individual weight slips from each clean-up. Tonnage provided by KPBP delineates Trash, Scrap Metal, Construction and Demolition (C&D) Debris, and Tires. Survey respondents may have aggregated tonnage of all materials.
- ◆ **Volunteer Hours:** Hours logged by volunteers on illegal dump clean-ups, whether recorded by KPBP in their financial system or reported incremental by survey respondents.
- ◆ **KPBP Costs Coded to Counties:** Costs and in-kind donations for services, supplies and equipment coded to “Temp Restricted” associated with illegal dump clean-ups directly attributable to illegal dumping-related activities as recorded by KPBP in their accounting system.

¹ It should be noted that responses were provided not only by county personnel, but also by related organizations including KPBP affiliates, the Pennsylvania Environmental Council, and a few cities. The acknowledgements section at the beginning of this report lists individual responding entities.

STATEWIDE ILLEGAL DUMPING COST RESEARCH

- ◆ **KPB Costs Manually Allocated to Counties:** Costs for services, supplies and equipment coded to “Temp Restricted” accounts in KPB’s financial system and manually assigned to specific counties by KPB staff in support of this project.
- ◆ **KPB Labor Costs:** The value of KPB staff time for hours coded directly to illegal dumping-related tasks for individual counties. This value was calculated by multiplying the number of recorded hours times the average hourly wage for staff in each calendar year, plus a 60 percent mark-up to cover reasonable benefits and administrative costs. The raw hourly rate used to determine total KPB Labor Cost is shown in Table 3-1.
- ◆ **County Direct Costs:** These are costs identified by stakeholders that were incurred and paid for directly by a respondent, and which had not been captured in KPB’s accounting of illegal dumping cleanups. Primary examples include additional clean-ups not recorded by KPB, and illegal dumping education and enforcement activities performed by local government employees.
- ◆ **Value of Volunteer Hours:** The value of volunteer hours – whether recorded by KPB in their financial system or reported incremental by survey respondents – was multiplied by volunteer hourly rate as shown in Table 3-1.²

Table 3-1 Hourly Rates Used to Project Total Costs

Year	KPB Staff Hourly Wage	Volunteer Hourly Value
2010	\$21.875	\$20.85
2011	\$24.24	\$21.36
2012	\$23.935	\$21.79

3.2 FINDINGS

Based on the data collected, Table 3-2 summarizes the 3-year average illegal dump cleanup data that was directly reported via KPB and the entities that responded to this study. KPB-managed data are shown separately from county-reported data. A total of 898 illegal dump cleanups were identified over the 2010-2012 time period from which the results in Table 3-2 are derived.

Table 3-2 Summary of Reported Cleanup Data (Annual Average, 2010-12)

	Tracked by KPB	Identified via Survey	Totals as Reported [1]	Percentage of Total
Cleanups	113	187	299	
Tons	774.25	650.58	1,424.83	
Direct Costs/In-kind Contributions	\$160,428	\$367,989	\$528,416	59.9%
Value of Volunteer Time	\$267,560	\$86,102	\$353,662	40.1%
Total Cost	\$427,988	\$454,090	\$882,078	100.0%

[1] Totals may not sum due to rounding.

As shown in Table 3-2, over the three year research period, almost \$900,000 was spent annually on illegal dump clean-ups. Almost 60 percent of these were direct costs (or in-kind contributions) of personnel

² Several respondents reported using their own specific volunteer hourly rates. To arrive at the results in this report, all volunteer hours were multiplied by the volunteer hourly as defined by the Independent Sector (www.independantsector.org).

STATEWIDE ILLEGAL DUMPING COST RESEARCH

and equipment. These results highlight the importance of volunteers to the management of illegal dump clean-ups, as over 40 percent of total costs were attributable to the value of volunteer time. Had these cleanup activities not had the benefit of volunteer participation, it is likely that either (a) the actual direct cost to achieve the cleanups would have been substantially higher, or (b) there would have been significantly fewer sites cleaned up, leaving significantly more tons of waste and debris on dump sites across Pennsylvania.

Also of interest, the following illegal dump cleanup averages were calculated from all counties:

- ◆ **Cleanup Costs per Ton:** The statewide average cleanup cost was found to be \$619 per ton³ of waste and debris.
- ◆ **Cost per Cleanup:** The statewide average cost per cleanup was \$2,947.

As the above bullets show, there was meaningful variance in the findings to the study, whether reported as a cost per ton or a cost per cleanup. However, mean and median values were found to be comparable, and the low and high outliers tended to be from counties with low population and low cleanup tonnage.

4. CONCLUSIONS

This study involved rigorous assembly of illegal dump clean up data from KPB and from the subset of organizations across Pennsylvania that responded to direct survey. While there may be small inaccuracies associated with the use of estimates by survey respondents, and acknowledging that self-reporting of illegal dumping-related data may introduce some inconsistencies, MSW Consultants believes the illegal dump cleanup, tonnage and cost estimates compiled in this study accurately, conservatively and comprehensively capture illegal dump remediation activity for these respondents.

Future study sponsored by KPB will seek to interpret and publicize the data contained in this report, and no further “big picture” conclusions are offered. However, based on our experience conducting the survey, we offer the following suggestions to KPB to continue improving the accounting of illegal dump activities across the Commonwealth:

- ◆ KPB already does a good job monitoring and tracking illegal dump cleanup activities in Pennsylvania. KPB should continue maintaining close contact with cities, counties and KPB Affiliates to ensure cleanup activities continue to be recorded.
- ◆ Although a great deal of useful information is already being collected, this effort identified opportunities to standardize the way in which cleanups and costs are reported for individual cleanup events. KPB should continue its efforts to standardize such reporting.
- ◆ A specific detail that would improve future tracking and monitoring of cleanups would be to assign and apply the unique KPB Event Identification Number assigned to each illegal dumping cleanup to entries in KPB’s QuickBooks financial tracking system.

³ Total tons were calculated by summing tons of waste, scrap metal, construction and demolition debris, and tires, using a conversion factor of 80 tires per ton.

APPENDIX A
SURVEY QUESTIONNAIRE

This page intentionally left blank.

Introduction

- Purpose of the survey
- Importance of the respondent's contribution to the survey
- Familiarity with PA CleanWays/KPB Illegal Dumping Survey Report/results for the respondent's area
- Have any of the illegal dumps identified in the report been cleaned-up?
- Was the respondent involved in the cleanup(s)?
- Which sites were cleaned up?
- Has there been any follow-up?
- Did the respondent's organization contribute to the cost of clean-ups?
- How were clean-up costs tracked?
- What other organizations were involved in the clean-up(s)?

Illegal Dumping Program Costs

Site Clean-ups

Site Clean-up Direct Costs

Labor

Employees

Hours

Employee rates

Traffic control

Emergency services

Personal protection equipment

Gloves

Safety vests

Supplies

Plastic bags

Super sacks

Other supplies

Portable winch

Refreshments (lunches, water, etc.)

PortaJohn rental

Heavy equipment

Roll-off rental

Wood chipper

Other site restoration costs (plantings, signs, etc.)

Hauling costs

MSW

Tires

Recycling (including scrap)

Other

Disposal costs

MSW (Facility name)

Tons

Tipping fee

Tires (Facility name)

Tons

Tipping fee

Recycling (including scrap) (Facility name(s))

Tons

Cost or Value

Other (such as electronics, vegetation) (Facility name(s))

Tons

Tipping fee

Site Clean-up Indirect Costs

- Volunteer labor
 - # of volunteers
 - # of volunteer hours
- Volunteer traffic control
- Value of donated emergency services
- Donations
 - Supplies
 - Plastic bags
 - Super sacks
 - Other supplies
 - Portable winch
 - Heavy equipment
 - Roll-off rental
 - Wood chipper
 - Refreshments (lunches, water, etc.)
 - PortaJohn or restroom accommodation value
 - Site restoration costs (plantings, signs, etc.)
 - Other site related donations
 - Donated hauling
 - MSW
 - Tires
 - Recycling (including scrap)
 - Other
 - Donated Disposal
 - MSW (Facility name)
 - Tons
 - Tipping fee
 - Tires (Facility name)
 - Tons
 - Tipping fee
 - Recycling (including scrap) (Facility name(s))
 - Tons
 - Cost or Value
 - Other (such as electronics, vegetation) (Facility name (s))
 - Tons
 - Tipping fee

Site Surveillance Costs for Remediated Sites

- Describe method(s)
- Equipment costs
- Value of donated equipment
- Labor
- Value of volunteer labor
- Other

Enforcement Officer Costs and Allocation

- # Officers
- # Hours or percentage of time devoted to illegal dumping
- Rate
- Equipment costs
- Training costs
- Travel costs
- Other

Illegal Dumping Prevention Education Costs and Allocation

- # Educators
- # Hours or percentage of time devoted to illegal dumping prevention education
- Rate
- Costs for educational peripherals
- Value of donated education peripherals
- Training costs
- Travel costs
- Other

Site Surveillance Costs for Active Illegal Dumps

- Describe method(s)
- Equipment costs
- Value of donated equipment
- Labor
- Value of volunteer labor
- Other