Worcester
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AN INDEPENDENT VOICE FOR RESPONSIBLE GOVERNMENT

SHOULD WORCESTER USE THE GREEN HILL PARK LANDFILL FOR STREET SWEEPINGS AND CATCH-BASIN MATERIALS?

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EXECUTIVE SUMMARY

When the Ballard Street landfill is closed and capped in the year 2000, Worcester will have to dispose of its street sweepings and catch-basin materials elsewhere. Since Massachusetts allows few options aside from sending these materials to a private landfill, Worcester will face the prospect of paying up to $1 million a year in disposal costs for its street sweepings and catch-basin materials. In addition, a transfer station for storing the materials would have to be constructed at a cost of up to $1 million. Worcester's Department of Public Works (DPW) has proposed a plan to avoid these costs by using twelve years of these materials to shape the inactive landfill in Green Hill Park so that it can be capped to today's standards. As part of this plan, DPW has offered $1 million of funds for recreation improvements for Green Hill Park. (The most recent master plan for the Park does not provide funds for these improvements.)

Opponents of DPW's plan object to placing these materials on the Green Hill Park landfill. They worry about the environmental impact and the length of the plan. They propose that the landfill be shaped with clean fill and capped immediately. This option would cost approximately $2 million to cap the site, $1 million for the construction of a transfer station, and $1 million per year in hauling and disposal costs for twelve years. Furthermore, it would not provide $1 million for park improvements.

In recent months, the City Council has expressed its concern over rising taxes and the detrimental effects of tax classification that pits commercial and industrial taxpayers against residential taxpayers.[1] As a result of these concerns, it has asked the City Manager to reduce municipal spending. DPW's proposal to place street sweepings and catch-basin waste on top of the existing landfill in Green Hill Park meets the City Council's cost-saving objectives. Because of the need for public officials to balance environmental and aesthetic concerns with fiscal constraints, the Bureau recommends that the City not foreclose the Green Hill Park option until an alternative plan can be developed, a plan that mitigates the costs of disposal, including the transfer station, secures funding for capping the Green Hill Park landfill, and addresses the funding of Green Hill Park recreational facilities. An alternative plan should explore the following options:

1. The development of a process for screening and testing materials used to shape the Green Hill Park landfill to ensure that these materials do not exceed agreed upon contaminant levels. This screening and testing process is being used in Portland, Oregon among other communities.

2. The implementation of a DPW-initiated, state-sponsored pilot program to explore recycling and reuse options. Such a study would examine examples of effective reuse from around the country and recommend changes in state regulatory policy to make the reuse of these materials feasible in Massachusetts which currently restricts such reuse. The results of the study are expected to be available in one year, and would therefore allow sufficient time to implement recycling and reuse strategies prior to capping the Ballard Street landfill in the year 2000.

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[1] See for example, Nick Kotsopoulos, "Council OKs Higher Taxes for Business," *Telegram and Gazette*, 19 November 1997; Nick Kotsopoulos, "Lukes Wants Property Tax, Budget Plan," *Telegram and Gazette*, 19 January 1998, p. B1.

3. If the City Council and the City Manager concur that the Green Hill Park landfill cannot be used, and if the recycling and reuse options do not significantly reduce the volume of these materials, the City will need to find the least expensive private landfill option. At present, the landfill in Hardwick would cost about half as much as other landfills.

I. INTRODUCTION

In conjunction with the revised master plan for Green Hill Park, DPW has proposed that an inactive landfill in Green Hill Park be capped after using Worcester's street sweeping and catch-basin material to shape the landfill to conform with state regulations. In 1973, the landfill was closed, and it was capped to standards of the day. Current capping standards are more stringent and offer more protection to the environment. DPW proposes such a plan in order to avoid an estimated $1 million annual cost of disposing these materials in a private landfill outside of the city. The DPW plan would also provide $1 million to Green Hill Park to be used for recreational benefits. Opponents of the plan prefer the use of clean fill to shape the landfill, and they favor capping the landfill immediately.

The purpose of this report is to analyze the existing plans and to survey other communities for examples of how to resolve this issue.

II. BACKGROUND

A. The Volume of Street Sweeping and Catch Basin Material

The City of Worcester sweeps 14,000 curb miles a year.[2] The residential sections of the City are usually swept twice a year, once in the spring to remove road sand and once in the fall to remove leaves. Commercial and industrial areas are swept more frequently. Downtown streets are swept every night for ten months of the year, and when weather permits in the remaining winter months as well. The annual volume of the street sweeping material collected is approximately 7,000 cubic yards.

[2] A curb mile is one mile of a paved road on one side of the street. For example, if a one mile stretch is swept three times a year, this would constitute six curb miles of sweeping, one mile for each side of the street, each swept three times.

In addition to sweeping streets, the City cleans material from sewer catch-basins. Catch-basins are large cylinders located under each sewer grate that prevent oil and grease and larger materials such as leaves, sand and soil from entering the sewer system. There are 14,338 catch basins in the City, and approximately 7,000 are cleaned each year. On average, the City cleans each catch-basin every two years. Those in more dense areas and areas subject to flooding are cleaned as frequently as four times a year. Those in less sensitive areas are cleaned every four years. The annual volume of catch-basin material collected is approximately 5,000 cubic yards.[3]

B. The Composition of Sweepings and Catch-Basin Waste

Street sweepings typically contain sand, litter, leaves, and other materials found on the streets. Studies have shown that the materials often contain elevated levels of petroleum and salt. An official from the Washington State Department of Ecology indicated that, with the exception of sweepings taken from areas with hazardous spills, the department does not "have any concern that street sweepings are hazardous." Catch-basin materials are similar to street sweepings in composition, but they are wet, and have a slightly higher organic content from decomposing wet leaves. As catch-basin materials are wet, they emit more of an odor than street sweepings and are more difficult to reuse.[4]

C. Environmental Regulation of Street Sweepings and Catch-Basin Material

The Massachusetts Department of Environmental Protection (DEP) regulates street sweepings and catch-basin material as solid waste which must be disposed of in a landfill. There are several exceptions to this requirement with respect to street sweepings. There are no exceptions to this policy with respect to the disposal of catch-basin material. Massachusetts regulates non-urban street sweepings less strictly than those taken from "urban center roads."[5] Non-urban street sweepings may

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[3] The figures provided by DPW on the volume of street sweepings and catch-basin materials are averages. The volume of such materials varies with the weather, e.g., if there is little snow in the winter, then there is a smaller volume of sand cleaned up.

[4] "Disposing of Sweeping Debris," *Pavement Maintenance & Reconstruction*, October/November 1997, pp. 38-39. For further information on the content of street sweepings and catch-basin materials, see, for example, "Street Sweeping Management Study: Post Sweeping Handling/Disposal," AGI Technologies, prepared for the City of Portland, August 10, 1994.

[5] DEP guidance policy gives a general definition of "urban center roads," but it does not specify which roads in Worcester fit in this category. "Urban center roads means local roads in central commercial and retail business districts and industrial and manufacturing areas" (Policy # BWP-94.092, p. 2). Much of Worcester's street sweepings is likely to fall into the urban category, as Worcester has large commercial and industrial districts which are swept more frequently than residential areas. In addition, the urban-center street sweepings might be difficult to separate from the non-urban center sweepings because it would require that the materials be stockpiled and stored for future use.

be reused for two purposes: public way fill and compost mixing. First, non-urban sweepings may be used as fill under roads and along the side of the road within a public way. They must not be used for these purposes in residential areas, below the level of ground water, in a designated no-salt area, within 100 feet of wetlands, or within 500 feet of a drinking-water supply. Second, non-urban sweepings may be mixed into compost. This reuse option is subject to the same location restrictions as the public way option. DEP policy does not allow the use of urban center street sweepings or catch-basin waste for landfill at public ways or for compost mixture purposes. While the authorized reuse options listed above may be undertaken without DEP approval, any other reuse options require application by the municipality and approval by DEP.

DEP allows another option for street sweeping disposal. The sweepings, but not catch-basin waste, may be used as "daily cover" for landfills. Many operating landfills are required to cover over their daily deposition of trash with a layer of cover material. DEP's guidance policy allows street sweepings to be used for this purpose, although the street sweepings often have to be combined with other materials in order to achieve the proper mix for daily cover material. Because DEP allows this practice, some landfills will take limited amounts of street sweepings for a lower cost than other landfill material. In fact, two landfills in the Worcester area currently accept street sweepings for daily cover without charge. The Wheelabrator Ash Landfill in Shrewsbury accepts the Town of Shrewsbury's street sweepings for free.[6] Wheelabrator indicated that it could take some of Worcester's street sweepings for daily cover, but not the entire amount. Wheelabrator would not indicate the exact amount it could accept. The owners of another landfill in Hardwick indicated that, at this time, they would not charge for street sweepings for daily cover material. Hardwick could accept Worcester's entire volume of sweepings.

As Massachusetts provides for few reuse options for street sweepings (especially for urban center road sweepings) and no reuse options for catch-basin waste, municipalities are left with the possibility of placing the materials in their own operating landfills or paying a private landfill to take the material. One additional, less expensive option is to place the materials on top of inactive municipal landfills. In order to cap these old landfills, the landfill must achieve the proper shape required by state regulations. Sweepings and catch-basin waste may be used to shape the old landfills before they are capped. The City has used this option for the past seven years at Ballard Street, and DPW proposes the same should be done with the Green Hill Park landfill commencing in the year 2000. These sites will be discussed in greater detail in later sections.

III. HISTORY OF WORCESTER'S STREET SWEEPING AND CATCH BASIN MATERIAL DISPOSAL

Before 1985, the City disposed of its street sweepings and catch-basin material in the Greenwood Street landfill. When this last operating landfill was closed in 1985, the City was forced to dispose of its street sweepings and catch-basin waste elsewhere. From July 1988 until August 1989, the City of Worcester paid the town of Auburn to place street

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[6] Wheelabrator agreed to take Shrewsbury's catch-basin waste and to use the town's street sweepings for daily cover as part of an agreement by which Shrewsbury allowed ash from the Wheelabrator incinerator to be deposited in Shrewsbury's landfill. Recently, Wheelabrator was allowed by DEP to change its daily cover requirement to a weekly cover requirement. This change was instituted to preserve landfill space. The change means that less material is needed as cover material.

sweepings and catch-basin waste in their Rochedale Street landfill. (Auburn used these materials to shape the landfill. It began capping the landfill in 1989.) After this time, in order to avoid disposal costs, the City of Worcester began to use its street sweepings to serve as the base for a cap at the Ballard Street site, an inactive landfill that had closed in 1971 but had never been capped. The City negotiated an agreement with DEP to allow the disposal of its street sweepings and catch-basin material at the Ballard Street site for six years as part of a capping plan. In 1996, with only one year remaining on the original capping agreement, the City had not deposited as much material as had been anticipated in the original agreement, so it negotiated with DEP and the neighborhood to allow the capping to continue for four more years. In exchange for the four additional years of disposal rights, the City agreed to build a soccer field near 211 Providence Street, using a portion of the funds saved by avoiding the costs of sending the materials to a landfill. The construction of the soccer field is expected to cost $231,000 and will be completed in the spring of 1998.

A. The Green Hill Park Landfill

Green Hill Park is Worcester's largest public park, encompassing 482 acres. The park was created in 1905 when the Green family sold its estate to the City. The park was also the home to a quarry which became the landfill that is the focus of this report. In the 1940s and 50s, there was illegal private dumping of tires and mattresses in the quarry.[7] In July of 1964, the City began to use the quarry to dispose of building-material refuse, which it periodically burned. This initially small operation was expanded in 1967 because of the great increase of material resulting from the East Central Urban Renewal Project. The burning was eventually halted due to complaints about air pollution.[8] In 1971, the quarry reopened as a sanitary landfill.[9] The site was to be used as a temporary landfill until the City could find a replacement for the Granite Street landfill (eventually the City decided to use the Greenwood street site). In 1972, as a result of a lawsuit brought by citizens of Worcester, a court ordered that the landfill be closed after six months. In 1973, the City closed the landfill and capped it in accordance with the standards of the day.

The landfill covers 16.2 acres or approximately 3% of the park. It includes 6.2 acres on an elevated plateau, but it also extends behind these fields into a wooded area. One inadequate soccer field sits atop the elevated portion of the landfill. Not only is the field smaller than regulation size, but also the topsoil above the landfill cap contains shards of glass which periodically come to the surface. This has led the soccer teams that use the field to employ glass patrols before games looking for and removing pieces of glass that have come to the surface.

B. The Green Hill Park Master Plan

Green Hill Park, as a whole, needs significant work in order to restore it to its former condition as the City's premiere park, centrally located, accessible, and attractive to all residents.

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[7] Edward McHugh, "Why the Dump in Green Hill Park?" *Telegram & Gazette*, 17 July 1967.

[8] Brian W. Langen, "Dump at Green Hill to Close Saturday," *Telegram & Gazette* 29 Aug 1968.

[9] "Dump at Green Hill to be Opened Today," *Telegram & Gazette*, 9 Nov 1971.

Roads and recreational facilities are in disrepair. In 1979, a master plan was published detailing $4.2 million worth of improvements to the park.[10] For all practical purposes, the 1979 master plan was not implemented because there was little money dedicated to the plan.

In 1996, a revised master plan was developed. This plan calls for $11 million in improvements. After some negotiation with the state, the City has secured a $1 million Urban Self-Help grant to contribute to the plan. The City will match these funds with $1 million of its own money, $800,000 from a bond the City will float using a $100,000 a year revenue stream from golf course fees, and $200,000 from Community Development Block Grants received from the Federal government. In applying for the state grant, the City agreed to remove a composting facility from the park, to modify its greens fees on the golf course, and to cap the old landfill to today's standards during the lifetime of the plan. The Master Plan does not anticipate the City providing funding for capping the landfill or for improvement of the soccer fields.[11]

IV. THE PLANS FOR SWEEPINGS AND THE LANDFILL IN GREEN HILL PARK

DPW's proposal for shaping and capping the Green Hill Park landfill has three purposes: to cap the landfill, to avoid disposal costs for street sweepings and catch-basin materials, and to provide recreational amenities for the park. Under its preferred plan, DPW would place twelve years of street sweepings and catch-basin materials on the landfill to shape it to conform with state regulations, cap the landfill to today's standards, and provide $1 million of amenities to the Park paid for by a portion of the savings achieved by avoiding landfill disposal costs. (The funds offered by DPW could be used for any Green Hill Park improvement purpose. The suggestion of soccer fields was made by citizens concerned with a soccer field shortage in the City.)

If the City does not choose the Green Hill Park landfill plan, DPW estimates that the cost of disposing of the street sweepings and catch-basin materials at a private landfill would be $1 million per year. This cost would require increasing the sewer use rate by fourteen cents per ccf, or nine percent. In addition, the City would have to build a transfer station in order to transport the materials to a landfill outside of the City. (DPW and a private engineering firm have given the Bureau a rough cost estimate of $750,000 to $1,000,000.) The siting of the transfer station and planning of truck routes will likely be controversial.[12]

DPW detailed the consequences of four plans, a "no action" option, a three-year sweeping disposal plan recommended by others, a six-year sweeping disposal plan, and a twelve-year sweeping disposal plan. While DPW prefers the twelve-year plan, it also

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[10] *A Master Plan for Green Hill Park and Chandler Hill Park, Worcester Massachusetts*, August 1979, "Letter from Carol R. Johnson & Associates, Inc.," p. 6.

[11] *Green Hill Park Master Plan Update*, Aug 4,1997.

[12] In both the Green Hill Park disposal plan and in the case of disposing of the waste in private landfills, the City will have to plan for truck routes. The Green Hill Park plan, however, will not require the building of a transfer station as trucks will not have to leave the City.

indicated that the six-year plan would achieve significant savings. It does not favor the three-year plan or the no-action plan.

In all of the plans that allow for the disposal of street sweepings and catch-basin materials in the Green Hill Park landfill, DPW would provide funds to improve Green Hill Park. These funds could be provided because the City would avoid disposal costs at a private landfill. The arrangement would be similar to the current situation at Ballard Street where the City is constructing a soccer field for the neighborhood in exchange for the right to place street sweepings and catch-basin waste on the Ballard Street landfill.

The four plans are as follows:

Option 1 - No Action. Beginning in the year 2000, when the Ballard Street site is closed, the City would dispose of the sweepings and catch-basin waste in a private landfill at an estimated cost of $1 million a year. The City would construct a transfer station in Worcester to transport the waste to a landfill. No landfill cap or recreational facilities would be provided.

Option 2 - Three-Year Plan. One regulation-size soccer field would be built in Green Hill Park twelve months after the date of approval of the plan. Beginning in the year 2000, the City would dispose of sweepings and catch-basin waste in the landfill for three years. At the conclusion of the plan, the City would cap the landfill in accordance with today's standards. DPW would provide $500,000 a year for park enhancements. After three years, the City would dispose of sweepings outside of the City at an estimated cost of $1 million a year. DPW does not favor this plan because of its expense. Compared to the six and twelve year plans, the three-year plan achieves smaller savings (3 years of $1 million disposal costs avoided) while envisioning a larger payment to the Park ($1.5 million vs. $1 million for the twelve-year plan).

Option 3 - Six-Year Plan. One regulation-size soccer field would be built in Green Hill Park twelve months after date of the approval of the plan. Beginning in the year 2000, the City would dispose sweepings and catch-basin waste in the landfill for six years. At the end of the six years, the City would construct a second regulation-size soccer field, a basketball court, a 100-car parking lot and a concession stand. At the conclusion of the plan, the City would cap the landfill in accordance with today's standards. The value of the recreation improvements provided by DPW would be approximately $700,000. After six years, Worcester would have to dispose of its street sweeping and catch basin waste outside of the City at an estimated cost of $1 million a year.

Option 4 - Twelve-Year Plan. One regulation-size soccer field would be built twelve months after date of approval. Beginning in the year 2000, the City would dispose of sweepings and catch-basin waste in the landfill for twelve years. At the end of six years, the City would construct a second regulation-size soccer field and one half of a 200-car parking lot. At the end of twelve years, the City would construct a third regulation-size soccer field, a basketball court, a concession stand and the other half of the parking lot. At the conclusion of the plan, the City would cap the landfill in accordance with today's standards. The value of the recreation improvements provided by DPW would be approximately $1 million. After twelve years, Worcester would have to dispose of its street sweeping and catch basin waste outside of the City at an estimated cost of $1 million a year.

In the summer of 1997, the City Council was presented with a fifth option. This option would be to cap the site with clean fill rather than sweepings. The estimated costs of this plan are $2 million to cap the site, and $1 million to build fields and other amenities on top of the landfill. In addition, as the plan contemplates the capping of the site without street sweepings, the City would be forced to pay for the disposal of its sweepings in a private landfill for an estimated $1 million a year beginning in the year 2000, and up to $1 million to build a transfer station.

V. ABOUT LANDFILLS

A. Capping Landfills

DEP regulates the capping of landfills. It is important to make a distinction between the construction of a landfill properly shaped for capping and the cap itself. The issue concerning the Green Hill Park landfill is often characterized as a debate over whether to cap the landfill with clean fill or street sweepings/catch-basin material. In reality, the debate is over what material to use to shape the landfill before the cap is put into place. First, a landfill must be shaped properly. That is, it must be shaped so that the grade or steepness of the edges is within regulatory limits so as to ensure that the landfill is structurally sound and in order to control water runoff. Once the proper shape of the landfill is established, it may then be capped. The cap consists of a layer of impervious material, either a layer of impervious plastic or eighteen inches of impervious clay. On top of this layer, there must be drainage material, usually six inches of sand or a manufactured sand alternative. On top of this layer is a minimum of twelve inches of vegetative support, usually top soil plus grass.

DEP does not require or recommend that clean fill be used to shape the landfill before capping. It does require that the landfill be properly shaped and that the cap follow the specifications listed above.

Recently, an issue arose concerning the possibility of receiving grants from the state to cap the Ballard Street and Green Hill Park landfills. Once a site is capped, no street sweepings can be placed on the site. The City plans to cap Ballard Street in the year 2000 after its disposal agreement runs out. The City chose not to seek funds to cap the Green Hill Park site immediately, as this would rule out the several options for placing street sweepings in the park landfill. Groups opposed to the street sweeping plan favor using clean fill to shape the landfill, and they suggest applying for state grant money immediately in order to cap the site as soon as possible without using street sweepings to shape the landfill.

The funds for which the City might apply are part of the State Revolving Fund (SRF). This fund provides grants in the form of twenty-year, low-interest loans. The grant amount is equivalent to one half the cost of capping (including financing costs). If, for example, the landfill costs $2 million to cap, and if the City would pay an additional $1 million in interest over the course of a privately-financed, twenty-year loan, then the state would adjust the interest rate of the loan so that the total twenty-year cost is $1.5 million (note that the effective interest rate provided by the state could be negative, with the state paying some

of the principal). DPW estimates that the cost of capping the Green Hill Park landfill is $2 million (not including financing costs).[13]

B. Are There Other Landfill Options in Worcester?

The Research Bureau examined DEP's landfill database which lists active, inactive, and even illegal landfills. There are no active landfills in the City. There are only two inactive, City-owned landfills which have not been capped to today's standards: Ballard Street and Green Hill Park. There are three private, inactive, uncapped landfills that are listed in DEP's database: James Street, Cataract Street, and Pullman/West Mountain/Brook Street. These sites are either illegal dumping sites or are considered by DEP to be inappropriate for accepting street waste.

C. Landfill Costs

The Research Bureau conducted its own independent survey of landfill tipping fees. Many landfills in Massachusetts have closed or are scheduled to close in the coming years. Landfill disposal costs are projected to rise in the future, although the actual rate of increase cannot be known in advance. The Research Bureau attempted to determine current landfill costs by surveying the five landfills closest to Worcester that are able to accept Worcester's volume of street sweepings and catch-basin waste. Most of the results were consistent with DPW's estimate that the City would have to pay $1 million a year in disposal costs if the Green Hill Park disposal options were foreclosed. The Hardwick landfill, however, is significantly less expensive than the others (less than one half the cost). If Hardwick's tipping fees remain at this lower price after the year 2000, Worcester's annual disposal costs might be closer to $500,000, a significant sum, but lower than current projections.[14] See Exhibit A.

VI. RECYCLING AND REUSE OPTIONS

Whether or not Worcester chooses to dispose of its street sweepings and catch-basin materials in Green Hill Park for a limited number of years, it will eventually face the prospect of paying for their disposal. If it does not use the Green Hill Park option at all, the City will face this problem in two years. The various options for disposal in the Green Hill Park landfill could delay this prospect until 2003 to 2012. Regardless of

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[13] Officials from DEP estimated that, on average, a cap costs $100,000 per acre. The cap will cover slightly more than the 16.2 acres, because of the need to reach required steepness and grades. Using this calculation, the cost of capping Green Hill Park is roughly consistent with DPW's $2 million estimate.

[14] The tipping fees in the chart represent only the costs charged by the landfill to take the materials. It does not include hauling costs, which could total up to $100,000 depending on the distance to the landfill. Nor does the figure include the costs of building a transfer station, estimated by DPW to cost $750,000 to $1 million.

which course is chosen, Worcester should take steps now to reduce its sweeping and catch-basin volume by exploring reuse and recycling options.

Along these lines, DPW has initiated development of a pilot program to explore reuse and recycling options. Worcester, Boston and the Massachusetts Executive Office of Environmental Affairs (EOEA) will soon announce this pilot program. The study will hire a researcher from one of the local colleges to investigate technical solutions for the reuse of sweepings and catch-basin waste. The researcher will conduct a literature search, investigate efforts in other cities and municipalities, and contact researchers at universities. By no later than May of 1998, the researcher will issue a report detailing promising avenues for future research that can be undertaken by Worcester and other municipalities. After this report is issued, the City will conduct detailed research on the most promising reuse possibilities. Within one year from the start of the study, DPW plans to have firm plans for reuse options. The study is estimated to cost $50,000-$100,000, with EOEA paying for a minimum of one third of the cost and Worcester and Boston splitting the remaining cost. Recycling and reuse of these materials does not depend solely on technical solutions. Effective reuse will also require greater flexibility in state regulations on sweepings and catch-basin materials. The study will also address how the state can modify its laws, regulations, and policies to promote the reuse of these materials.

VII. Recycling Options from Other Municipalities

Recycling and reuse have gone forward in other parts of the country. Portland, Oregon and Bloomington, Minnesota are two municipalities that are quite advanced in implementing recycling programs.

A. Portland, Oregon

Seven years ago Portland, Oregon, faced the same problem that Worcester faces today. Portland was running out of landfill space, and its studies indicated that private landfill costs would be increasing. To avoid paying high landfill disposal costs, Portland began to research and implement options for reusing street sweeping materials.

Four aspects of Portland's reuse and recycling program are relevant to Worcester: (1) Its treatment of street sweeping of sand in the spring cleanup; (2) Its efforts to mix street sweepings with compost; (3) Its study of reuse options for catch-basin waste; (4) Its testing of treated sweeping materials.[15]

1. Road Sand Cleanup

Portland cleans up its winter sand and reuses it. As in Worcester, a large percentage of street sweepings comes from the sand that is put down in winter storms. It purchased a screener to sift out materials too small or too large for reuse.[16] Portland screens and washes

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[15] Portland also has an effective program for composting leaf waste, which is a significant portion of materials picked up by sweepers. As Worcester already composts its leaves, this report will not examine this aspect of Portland's recycling operations.

[16] Originally Portland bought a Reed Screen-all screener, but later switched to a trummel screener which is a large rotating cylinder.

the recovered sand. The sand that is too small for the screener falls through and is reused for masonry sand. The road sand that is of proper size is tested for certain contaminants following an agreement with Oregon's Department of Environment Quality (DEQ). 95% of the road sand that is put down in the winter is recovered in this process. Portland then reuses the sand the next winter. It also treats the sand of suburban communities, so Portland ends up with a surplus of sand which it sells back to the suburbs. Reclaimed sand is cheaper than virgin sand. Many communities prefer this reclaimed sand not only for the lower cost, but because it has a lower organic content than virgin sand, as the organic content is reduced in the washing process.[17]

2. Street Sweepings

Portland screens its sweepings to remove large items, e.g., bottles, car parts, litter, etc. The screened waste is placed in a sanitary landfill. The sweepings are disposed of in a construction landfill. Recently, Portland experimented successfully with composting the sweepings to create topsoil. It has also received a grant from the state DEQ to experiment with different compost mixtures. As a result of this pilot program, Portland hopes to find a composting mixture that will satisfy DEQ so that the sweepings can be composted rather than deposited in a construction landfill.

3. Catch-Basin Waste

Portland's sewer system is different from Worcester's. It does not have catch-basins like Worcester's, but it does have large sumps that collect material similar to Worcester's catch-basin materials. Portland does not currently recycle this waste, but the city has commissioned a study that estimates it might be able to recycle 75% of its catch-basin-like material. Part of the process envisioned involves heating the material to dry it out.

4. Testing

Portland has engaged in testing recycled street sweeping material. It began by testing its sweepings for many different types of contaminants. It was particularly concerned about the presence of lead. No elevated lead levels were detected. After performing various tests, Portland's main concern was that there might be a high petroleum content to the sweepings. Initial testing indicated that the sweepings had a high hydrocarbon content. But the initial test (the TCLP test) measured all organic content, and its readings could have been affected by the presence of leaves or other organic materials. Portland then employed a more sophisticated test (SPLP) which measured only petroleum content, not the larger category of hydrocarbons. Using this test, Portland found the presence of petroleum, but in amounts that fell within regulatory limits. Portland authorities hope that the results of this testing and the experimentation with compost mixes will persuade the DEQ to reconsider its policy of treating sweepings as solid waste and requiring them to be landfilled.

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[17] Worcester's DPW buys sand that is prewashed. New sand is angular; reused sand is rounded. DPW is concerned about the percentage of reused sand that can be mixed with virgin sand without compromising the traction enhancement characteristics of virgin sand. This is an example of an issue that Worcester's pilot program should address.

B. Bloomington, Minnesota

Bloomington, Minnesota, began efforts to reuse sweeping material in 1992. As the city faced dumping costs of $95 a ton, it needed to reduce the volume of sweepings taken to a landfill. The city's goal was to reduce the volume of street sweepings that were required to be taken to a landfill from 4,500 cubic yards annually to 100 cubic yards over several years.

Bloomington employed two strategies to reach these goals. First, the city sought to reuse road sand. Second, it sought to blend the sweepings with other soil products to make topsoil. Bloomington purchased a screener and washer for $80,000. The city tried different washing methods, settling on one that produced clean sand that was found by an independent testing laboratory to have "no adverse readings." The program achieved a nearly 90% reduction in street sweepings landfilled.[18]

VIII. Conclusions and Recommendations

The sweepings controversy results from two legitimate competing concerns. On the one hand, citizens are concerned about the environmental impact of the Green Hill Park disposal option, and they worry about of the length of time of the plan. On the other hand, citizens are faced with the prospect of paying significant costs to take these materials to a private landfill, costs they do not bear today.

The City must attempt to balance environmental concerns (e.g., the content of the materials used to shape the landfill before capping, the length of time over which the disposal will occur, truck traffic, and the potential for odors from these materials) with the City's fiscal constraints.

As previously noted, it will cost the City up to $1 million a year to dispose of these materials in private landfills after 2000 when the Ballard Street site is full. In addition, if the materials are trucked to a landfill, the City will have to build a transfer station. Not only will the cost of the transfer station be significant, the siting of a transfer station is likely to be controversial. Finally, the Green Hill Park sweeping plan provides needed funds for Green Hill Park. The 1979 Master Plan for the Park failed because of a lack of funds. The 1996 Revised Master Plan calls for $11 million of spending. Only $2 million of City and state funds have been secured for the plan. In addition, the plan anticipates that recreational facilities, as well as other projects such as the Vietnam Veterans' Memorial, will be paid for by outside sources, not City or state funds. The soccer fields and other recreational amenities that would be provided by DPW in the sweeping plan may never be built if the plan does not go forward.

In light of the need for public officials to balance environmental and aesthetic concerns with fiscal constraints, the Research Bureau recommends that the City not foreclose the option of placing street sweepings and catch-basin materials on the Green Hill Park landfill until it has a firm alternative plan in place. This alternative must address the significant disposal costs, the costs and siting concerns of a transfer station, the cost of capping the Green Hill Park landfill,

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[18] "Reduce and Reuse Street Sweepings: Bloomington, Minnesota," Department of Public Works, Maintenance Division; "Recycled Sand: On the Road Again," *Governing*, May 1994, p. 60.

and funds for recreational facilities in the park. Any alternative plan should explore the following options:

1. The development of screening and testing procedures for materials used to shape the Green Hill Park landfill. First, the City should consider screening its sweepings to remove large trash, so that large-sized waste does not go into the landfill. The purchase of a screening machine is relatively inexpensive (ca. $50-100 thousand). Second, it should agree to test materials put into the landfill. Portland tests its processed sweepings quarterly.

2. The development of ways to reduce or reuse street sweepings and catch-basin materials. Eventually Worcester will face the prospect of disposing its street sweepings and catch-basin materials in a private landfill. Rejection of the Green Hill Park landfill will hasten this eventuality to the year 2000. Adoption of the Green Hill Park landfill may push back this eventuality to 2012. To prepare for this eventuality, Worcester should begin to study ways to reduce or recycle its street sweepings.

The Research Bureau strongly supports the DPW-initiated pilot plan to study reuse options. This study will begin the process of determining how to reduce street sweeping and catch-basin waste. Within one year, the City should have recycling options that can be implemented shortly thereafter. Portland and Bloomington started the process of investigating recycling these materials several years ago. They achieved reductions in the first few years, and they have continued to refine their processes to make them more efficient. Recycling and reuse may not rid Worcester of all of these materials, but it has the potential to reduce them significantly. This effort will also require flexibility on the part of state government to allow more reuse options. The City Council and the City Manager should work with the state delegation to reconsider state laws, regulations and policies to allow for greater flexibility for reuse.

3. If the City Council and the City Manager concur that the Green Hill Park landfill cannot be used, and if the recycling and reuse options do not significantly reduce the volume of these materials, the City will need to find the least expensive private landfill option. The lowest cost option in 1998 is the Hardwick landfill. If its prices do not change in the future, the annual cost of street waste disposal might be reduced to $500,000. Landfill costs, however, are projected to rise, and it is not clear that Worcester could secure a lower price for a long-term contract. Furthermore, if the City chooses the private landfill option, its costs could change radically with regulatory changes or the premature closing of a low-cost landfill. Despite the uncertainty of this option, if the City chooses the private landfill option, it should conduct a careful survey of landfill costs to identify the lowest cost option.