

GAO

Briefing Report to Congressional Requesters

June 1989

NONHAZARDOUS WASTE

State Management of Municipal Landfills and Landfill Expansions



595871



Resources, Community, and
Economic Development Division

B-235708

June 29, 1989

The Honorable John Heinz
United States Senate

The Honorable William F. Goodling
House of Representatives

In response to your June 8, 1988, letter and subsequent discussions with your offices, we agreed to develop information on municipal landfills and landfill expansions. On May 3, 1989, we briefed your offices and agreed to provide a briefing report on the results of our work.

You expressed concern about municipal landfills seeking state permits to expand. Your concern was prompted by a Pennsylvania landfill listed on the Environmental Protection Agency's (EPA) National Priorities List (NPL)-- a list of hazardous waste sites posing serious threats to health and the environment and eligible for EPA's Superfund program. Citizens residing near this landfill have expressed concern about contamination at the site, and whether the owner's past operating record will lead to additional contamination if the site receives approval to expand its operations. Because of the possible expansion at this Pennsylvania landfill, you asked us to conduct a 50-state survey to determine whether this possible expansion is an isolated situation or whether expansions at municipal landfills are occurring nationwide. Specifically, you asked us to determine the following:

1. How many municipal landfills are on, or are proposed for, the NPL, and how many have sought approval to expand?
2. How many municipal landfills not on the NPL have been identified as requiring cleanup under state hazardous waste programs, and how many have sought approval to expand?
3. How many municipal landfills not on the NPL or requiring cleanup under state hazardous waste programs are operating, and how many have sought approval to expand?

4. Do states provide for public participation to consider citizens' views, and do states consider the owner/operators' past operating records as part of the permitting process for municipal landfill expansions?

To respond to your questions, we conducted a telephone survey of state solid waste and/or hazardous waste officials in each of the 50 states. Officials in each of the 50 states provided us data for three of the four questions. However, for question three, one state could not provide the number of operating municipal landfills, and eight states could not provide expansion data on municipal landfills. Details of our objectives, scope, and methodology, as well as the data limitations, are presented in section 2.

In summary, our analysis of data provided by state officials showed the following:

- Of the 1,177 sites included in the June 1988 update of the NPL, 249, or 21 percent, are municipal landfills. Of these 249 municipal landfills, 14 have sought approval to expand in the last 2 years. Four of the 14 municipal landfills are in Pennsylvania. (See sections 1 and 3.)
- In addition to the 249 NPL municipal landfills, 116 municipal landfills not on the NPL have been identified as requiring cleanup under state hazardous waste programs in 8 states. Within the last 2 years, 12 of these 116 have sought permits to expand. The remaining 42 states have not identified municipal landfill sites requiring cleanup. (See section 4.)
- In addition to the municipal landfills identified above, 7,575 municipal landfills, neither on the NPL nor requiring cleanup under state programs, were operating in 49 states as of October 1988. In the 42 states with available expansion data, 640 municipal landfill applications to expand have been submitted in the last 2 years for state approval. (See section 5.)
- As part of the permitting process for municipal landfill expansions, 46 states provide for public participation to consider citizens' views while 4 states do not, and 43 states consider the owner/operators' past operating records while 7 states do not. (See section 6.)

The Congress recognized the potential threat that facilities, such as municipal landfills, may pose to human health and the environment and required EPA in 1984 to

revise its existing criteria to deal with this potential threat. In response, EPA proposed new minimum criteria for operating municipal landfills on August 30, 1988. These criteria would require location, design, and operating safeguards to reduce the environmental threat that EPA says municipal landfills may pose. EPA is analyzing public comments on its proposal and anticipates finalizing its criteria in late 1989. After the criteria are finalized, states will have 18 months to implement them. If EPA determines that states have not adequately implemented the criteria, EPA can inspect and take enforcement actions against owner/operators for not having adequate environmental safeguards, such as groundwater monitoring and operating controls, at operating and expanding municipal landfills. These criteria, when finalized and properly implemented, should make operating municipal landfills, including expansions at the NPL sites and other operating municipal landfills, safer and reduce environmental threats. (See section 7.)

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Because EPA is responsible for assessing the adequacy of states' programs, we discussed the results of our survey of states' permitting programs and the status of EPA's proposed minimum criteria for operating landfills with EPA officials. We have included their comments, as appropriate. As requested, however, we did not ask for official EPA or state comments on a draft of the report.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this briefing report until 15 days from the date of this letter. At that time we will send copies to appropriate congressional committees; the Administrator, EPA; the Director, Office of Management and Budget; the state agencies included in our review; and other interested parties. Copies will be made available to others upon request.

Major contributors to this briefing report are listed in appendix I.



Richard L. Hembra
Director, Environmental
Protection Issues

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ABBREVIATIONS

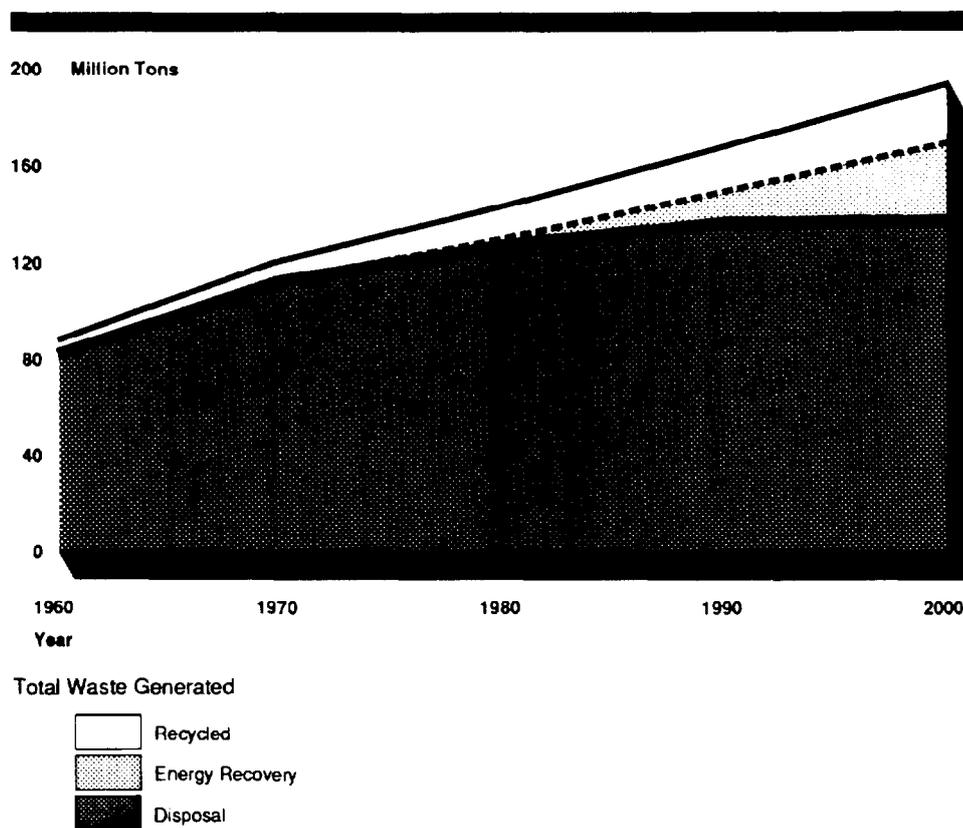
EPA	Environmental Protection Agency
GAO	General Accounting Office
NPL	National Priorities List
RCED	Resources, Community, and Economic Development Division
RCRA	Resource Conservation and Recovery Act

SECTION 1

INTRODUCTION

Based on the Environmental Protection Agency's (EPA) estimates, municipal waste generated in the United States has increased from about 88 million tons in 1960 to about 163 million tons today, as shown in figure 1.1. Estimates are that the total amount generated will increase to about 193 million tons by the year 2000. Even after recycling and energy recovery, the majority of municipal waste generated will require disposal. EPA estimates that about 134 of the 163 million tons of municipal waste are most likely being disposed of in municipal landfills.

Figure 1.1: Municipal Waste Generated

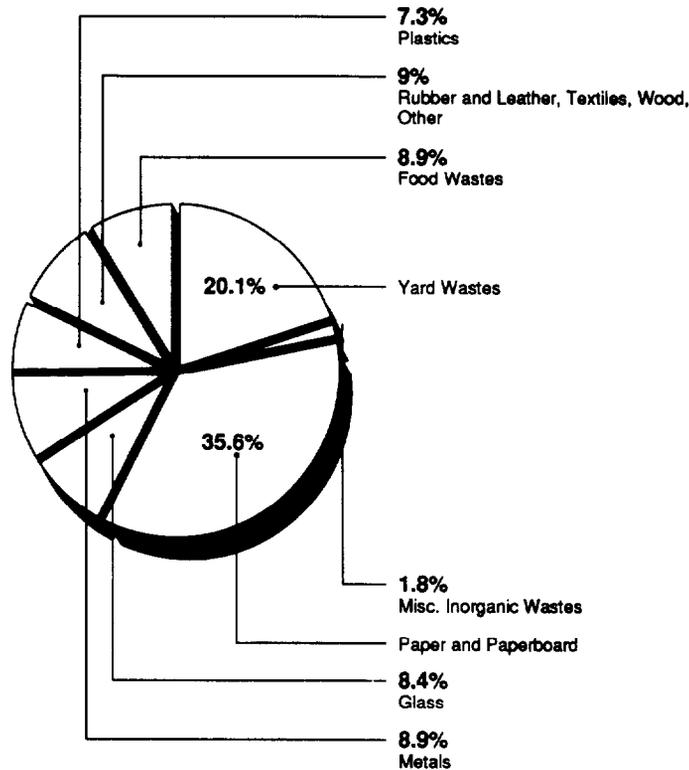


Source: EPA and GAO.

According to EPA, municipal landfills are owned by private companies, local governments, state governments, or the federal government. Municipal landfills primarily receive household refuse, nonhazardous commercial waste, and limited amounts of other types of solid waste. As shown in figure 1.2, municipal solid waste includes paper, glass, metal, plastic, food, yard, and other

wastes. Although municipal waste is considered nonhazardous, it may contain hazardous chemicals, and some may degrade biologically and/or chemically into more toxic material.

Figure 1.2: Types of Waste Going into Municipal Landfills^a



^aPercentages reflect discards into the municipal waste stream as of 1986.

Source: EPA.

Municipal waste has received national attention in the past several years because of the rapid depletion of existing landfill capacity in certain areas and the difficulty municipalities are having when deciding what to do with the trash generated in their communities. In addition, public concern has increased over the safe location and design of new landfill space. Up until 1979 when EPA established minimum standards, there were no federal requirements prohibiting hazardous waste disposal in municipal landfills or requirements for the safe location and design of municipal landfills. State municipal landfill regulations often allowed hazardous waste to be disposed of with municipal waste. As a result, there are municipal landfills that have contaminated the groundwater. Municipal landfills posing serious threats to public health and/or the environment are eligible for cleanup under EPA's Superfund program.

THE NATIONAL PRIORITIES LIST

To address the problem of hazardous waste cleanup, in 1980 the Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as Superfund. Superfund established both the legal and financial mechanisms to clean up abandoned or uncontrolled hazardous waste sites posing threats to the public health and the environment. Sites meeting these conditions are included on EPA's National Priorities List (NPL) and are eligible for federal funding to remedy environmental problems caused by the sites.

The process of listing sites on the NPL begins with someone notifying EPA of the potential site. EPA is informed of sites by state and local officials, owners and operators of facilities where hazardous substances have been released, the general public, and its own assessment and enforcement efforts. Names of potential sites are included in an inventory called the Comprehensive Environmental Response, Compensation, and Liability Information System. According to EPA, only those sites listed in this inventory are evaluated for inclusion in the NPL. As of March 30, 1989, the inventory of potentially hazardous sites amounted to about 31,000 sites.

Once a site is listed in EPA's inventory, EPA evaluates the sites to determine their eligibility for the NPL. To be included on the NPL, the site must score above a threshold level on EPA's hazard ranking system. According to the Acting Chief of EPA's Hazard Ranking and Listing Branch, three major factors determine if a site is placed on the NPL: (1) the nature of the wastes at the site, (2) the likelihood that a release of hazardous waste will occur, and (3) the number of people that would be affected by a release of hazardous waste. As of June 1988, the NPL included 799 final and 378 proposed sites, for a total of 1,177.¹

THE RESOURCE CONSERVATION AND RECOVERY ACT

The Resource Conservation and Recovery Act of 1976 (RCRA) established a cooperative framework for federal, state, and local governments to control the management of solid waste. The act requires EPA to establish guidelines and provide technical assistance to state and local governments for planning and developing environmentally sound waste management practices. The

¹EPA's June 1988 revision to the NPL is its seventh revision of final and proposed sites since 1983. Once a site is proposed, EPA requests public comments on whether the site should be finalized. Since EPA's June 1988 revision, EPA has finalized some of the proposed sites. As of March 1989, the NPL contains 1,163 sites of which 890 are final and 273 are proposed.

guidelines assist states in developing and implementing state solid waste management plans and address the minimum requirements for approval of state plans. The actual planning and implementation of solid waste programs are state and local functions.

In 1979, EPA developed criteria to be used by states to define those solid waste management practices that constitute open dumping of solid waste and to minimize potential health hazards posed by open dumps. States with approved plans were required to adopt these minimum criteria in their solid waste programs and upgrade or close all open dumps. EPA classifies solid waste disposal facilities as either landfills (municipal, industrial, demolition debris, or other), surface impoundments, land application units, or waste piles. A facility that meets the criteria is classified as a sanitary landfill; a facility that fails to meet the criteria is classified as an open dump.

Beginning in 1980, hazardous waste from large quantity generators could no longer be disposed of in sanitary landfills. EPA regulations required that hazardous waste be disposed of in hazardous waste disposal facilities. Exceptions were given, however, to hazardous waste generated by households and establishments that generate small quantities of hazardous waste.² Household hazardous waste includes products such as household cleansers, grease and rust solvents, paints and thinners, and fingernail polish remover. Generators of small quantities of hazardous waste produce arsenic, lead, mercury, strong acids and alkalis, and other wastes. EPA does not know how many tons of these wastes are generated and ultimately disposed of in municipal landfills.

In 1984, the Congress amended RCRA. The legislative history of the 1984 amendments indicates that the Congress was concerned with the large amount of household hazardous waste and small quantity generator hazardous waste being disposed of in facilities, such as municipal landfills, because these facilities may not have been suited to receive such hazardous waste. To better ensure that human health and the environment are protected, the 1984 amendments required EPA to study the adequacy of its minimum criteria developed in 1979 for solid waste facilities and to revise the criteria for facilities that receive household hazardous waste or small quantity generator waste. The amendments also required states to establish, by November 1987, a permit program or other system of prior approval for facilities, such as municipal landfills, that may receive household hazardous waste or small

²A small quantity hazardous waste generator is classified by EPA as one that produces less than 100 kilograms of hazardous waste per month. Generators that produce larger amounts are subject to hazardous waste regulations promulgated under Subtitle C of RCRA.

quantity generator hazardous waste. In response to the 1984 amendments, EPA, in August 1988, proposed establishing new minimum criteria for operating municipal landfills. This proposal is discussed in more detail in section 7.

SECTION 2

OBJECTIVES, SCOPE, AND METHODOLOGY

In a June 8, 1988, letter, Senator John Heinz and Representative William F. Goodling requested that we provide information on municipal landfills and municipal landfill expansions. Their request was prompted by a municipal landfill in Pennsylvania that is on EPA's NPL--a list of sites posing the greatest threat to health and the environment. The owner of the landfill is seeking a state-issued permit to expand the landfill, and citizens residing near the landfill are concerned about whether an expansion at the site could result in additional contamination.

On the basis of the letter and subsequent discussions with the Senator's and the Representative's offices, we agreed to provide nationwide data on the following questions.

1. How many municipal landfills are on, or are proposed for, the NPL, and how many have sought approval to expand?
2. How many municipal landfills not on the NPL have been identified as requiring cleanup under state hazardous waste programs, and how many have sought approval to expand?
3. How many municipal landfills not on the NPL or requiring cleanup under state hazardous waste programs are operating, and how many have sought approval to expand?
4. Do states provide for public participation to consider citizens' views, and do states consider the owner/operators' past operating records as part of the permitting process for municipal landfill expansions?

Because municipal landfills are regulated by states under their solid waste programs, we conducted a 50-state telephone survey and asked state solid waste and/or state hazardous waste officials questions to obtain information on municipal landfills. State solid waste officials are responsible for municipal landfill regulations and procedures, as well as maintaining data on municipal landfills. State hazardous waste officials are responsible for state programs to clean up hazardous waste contaminated sites, as well as for maintaining data on NPL sites. We identified these officials from a list provided by the

Association of State and Territorial Solid Waste Management Officials.¹

To obtain data on municipal landfill expansions, we specified an October 1986 to October 1988 time frame because we believed states could more easily provide us expansion information covering a recent 2-year period than one covering an older less relevant period of time. October 1988 was specified as our cut-off point because our state telephone survey began at about this time.

To answer question 1, we asked state solid waste and hazardous waste officials in each of the 50 states to provide us data on the number of municipal landfills in each state that are on or proposed for the NPL. We defined a municipal landfill as one that has accepted or currently accepts household waste. For these NPL municipal landfills, we asked state officials to identify the landfills as operating, or inactive/closed as of October 1988. An inactive landfill is one that is no longer accepting waste but which has not been properly closed under state regulations. A closed landfill is inactive and has been properly closed under state regulations. While states' closure regulations vary, they can include requirements to apply a final soil cover designed to minimize water infiltration. To obtain data on how many NPL municipal landfills were expanding, we asked state officials if NPL municipal landfills had submitted expansion permit applications to the state regulatory agencies between October 1986 and October 1988. For applications submitted, we asked if these applications were approved, pending, or denied. Results of the telephone survey used to answer question 1 are discussed in section 3.

To answer question 2, we asked state officials in each of the 50 states if their state had a hazardous waste program to clean up non-NPL sites. In those states that did have a state hazardous waste program to clean up non-NPL sites, we asked whether their states had developed a priority cleanup list that identified additional municipal landfills not eligible for the NPL, but which had confirmed hazardous waste contamination. Those states that had developed priority cleanup lists were asked to identify the number of municipal landfills on the state list, the operating status of the landfills, and information on whether these state priority list municipal landfills had sought to expand or received permits to expand between October 1986 and October 1988. Results of the telephone survey used to answer this question are discussed in section 4.

¹The association is a nonprofit national organization of the directors of state solid and hazardous waste management programs and their staffs. Its purpose is to develop and advance effective programs for the management of solid waste.

To answer question 3, we asked state solid waste officials to provide us data on the number of operating municipal landfills in their respective states as of October 1988. We also asked these officials to provide us data on the number of expansion applications received by the state between October 1986 and October 1988, and of those, the number of applications approved, pending, or denied as of October 1988. The results of the telephone survey used to answer this question are discussed in section 5.

While the telephone survey was used to obtain answers to questions 1, 2, and 3, a number of the states could only provide us with rough estimates during the telephone survey, or could not provide us with certain numbers without a file review. To obtain more accurate and complete data from the states, we sent letters to state officials who participated in our survey. Officials who provided us numbers during our telephone survey were provided these numbers in letters and were asked to return the letters, confirming or revising the numbers. Officials who could not readily provide us numbers during our telephone survey were asked to provide these numbers and return the letters.

To answer question 4, we asked the state solid waste officials if the states allow or require the public to participate in municipal landfill permitting decisions and, if so, what the state allowed or required. We also asked these officials if they review and consider the municipal landfill owner/operators' past operating records when considering permit applications. Results of the telephone survey to answer this question are discussed in section 6.

The use of a telephone survey to obtain information contains inherent limitations. The major limitation is the inability to independently verify the data received from the states. Also, the use of a telephone survey did not permit us to assess the adequacy of state public participation regulations, or how states incorporate public comments into their permitting decisions. Similarly, the use of a telephone survey did not allow us to assess how states take into account the owner/operators' past operating records when permitting decisions on expansion applications are made, or to ensure that the owner/operators' past operating records are thoroughly reviewed.

In addition to contacting and obtaining information from state solid waste and hazardous waste officials, we met with EPA's Acting Chief, Special Wastes Branch, Waste Management Division, Office of Solid Waste, to obtain information on current and proposed regulations regarding municipal landfills and to confirm information obtained on state programs.

We conducted our review between August 1988 and April 1989 in accordance with generally accepted government auditing standards. We discussed the results of our survey of state permitting

procedures and the status of EPA's proposed municipal landfill regulations with EPA officials and incorporated their comments, where appropriate. As requested, however, we did not obtain official comments from EPA or states on this briefing report.

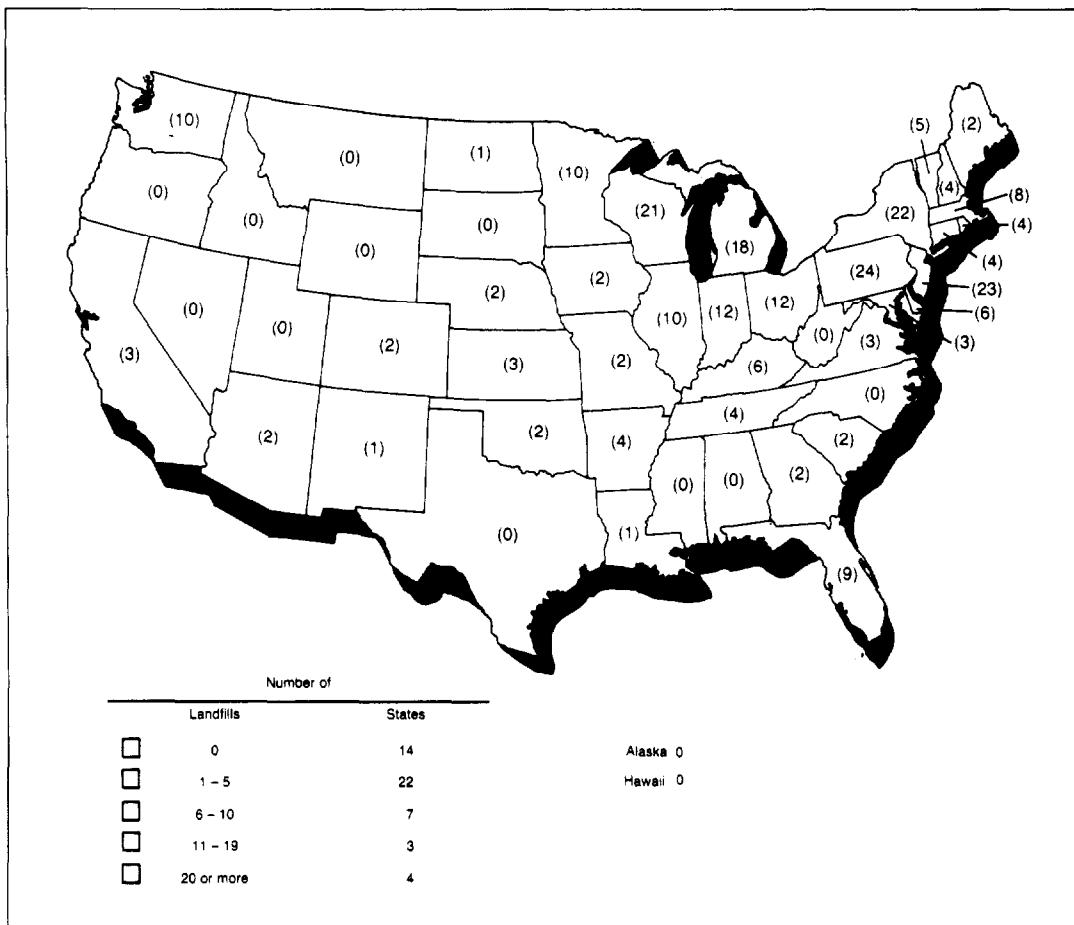
SECTION 3

NPL MUNICIPAL LANDFILLS

NUMBER OF NPL
MUNICIPAL LANDFILLS

Of the 1,177 sites on EPA's June 1988 revision of the NPL, 249, or 21 percent, are municipal landfills. As shown in figure 3.1, the number of NPL municipal landfills in each state varies widely and are concentrated in certain states. For instance, four states--New York, New Jersey, Pennsylvania, and Wisconsin--have more than 20 NPL municipal landfills each and, in total, account for 90, or about 36 percent, of the 249 municipal landfills on the NPL. In contrast, 14 states have no municipal landfills on the NPL. The remaining 32 states have between 1 and 19 municipal landfills on the NPL.

Figure 3.1: Location of NPL Municipal Landfills



Source: GAO.

Of the 249 NPL municipal landfills, 207 are inactive or closed landfills and the remaining 42 are operating. An inactive landfill is one that is no longer accepting waste but has not met state closing requirements, while a closed landfill has met state closing requirements. As shown in table 3.1, 19 states have only inactive or closed NPL municipal landfills, while the remaining 17 states have both operating and inactive or closed municipal landfills. Of the 207 inactive or closed municipal NPL landfills, 81, or 39 percent, are located in four states--New York, New Jersey, Pennsylvania, and Wisconsin. Of the 42 operating NPL municipal landfills, half are located in four states--Indiana, Massachusetts, Pennsylvania, and Washington.

Table 3.1: Status of NPL Municipal Landfills by State as of October 1988

<u>State</u>	<u>NPL municipal landfills</u>		
	<u>Inactive or closed</u>	<u>Operating</u>	<u>Total</u>
Inactive or closed NPL municipal landfills			
Arkansas	4	0	4
Delaware	6	0	6
Florida	9	0	9
Georgia	2	0	2
Iowa	2	0	2
Kansas	3	0	3
Kentucky	6	0	6
Louisiana	1	0	1
Maine	2	0	2
Maryland	3	0	3
Missouri	2	0	2
Nebraska	2	0	2
New Hampshire	4	0	4
New Jersey	23	0	23
New Mexico	1	0	1
North Dakota	1	0	1
Oklahoma	2	0	2
Tennessee	4	0	4
Virginia	<u>3</u>	<u>0</u>	<u>3</u>
Total	<u>80</u>	<u>0</u>	<u>80</u>
Operating and inactive or closed NPL municipal landfills			
Arizona	1	1	2
California	1	2	3
Colorado	1	1	2
Connecticut	3	1	4

(continue)

<u>State</u>	<u>Inactive or closed</u>	<u>Operating</u>	<u>Total</u>
Illinois	9	1	10
Indiana	8	4	12
Massachusetts	2	6	8
Michigan	16	2	18
Minnesota	7	3	10
New York	19	3	22
Ohio	11	1	12
Pennsylvania	19	5	24
Rhode Island	3	1	4
South Carolina	1	1	2
Vermont	2	3	5
Washington	4	6	10
Wisconsin	<u>20</u>	<u>1</u>	<u>21</u>
Total	<u>127</u>	<u>42</u>	<u>169</u>
Total	<u>207</u>	<u>42</u>	<u>249</u>

NPL MUNICIPAL LANDFILL
APPLICATIONS TO EXPAND

During the 2-year period between October 1, 1986, and October 1, 1988, 10 states received 14 applications to expand NPL municipal landfills. The 14 applications represent 6 percent of the 249 municipal landfills on the NPL. Of the 14, 11 were at operating NPL municipal landfills and the other three--in Colorado, Kentucky, and Oklahoma--were at sites where the original municipal landfills were inactive or closed. As shown in table 3.2, as of October 1988, seven of the permit applications were approved, six were pending, and one was denied. Four of the 14 permit applications were in Pennsylvania. Of these four, three were approved, and one was pending as of October 1988. The remaining 10 applications to expand at NPL sites came from nine states--one each, except for Colorado, which had two.

Table 3.2: Status of NPL Municipal Landfill Permit Applications to Expand Between October 1986 and October 1988

<u>State</u>	<u>Number of applications to expand</u>	<u>Number of applications approved</u>	<u>Number pending</u>	<u>Number denied</u>
Colorado	2	1	1	0
Indiana	1	1	0	0
Kentucky	1	0	0	1
Michigan	1	0	1	0
Minnesota	1	0	1	0
Oklahoma	1	1	0	0
Pennsylvania	4	3	1	0

(continue)

<u>State</u>	<u>Number of applications to expand</u>	<u>Number of applications approved</u>	<u>Number pending</u>	<u>Number denied</u>
Rhode Island	1	0	1	0
Vermont	1	0	1	0
Wisconsin	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>
Total	<u>14</u>	<u>7</u>	<u>6</u>	<u>1</u>

According to solid waste officials in all but one of the states with approved or pending NPL expansions, state approval was, or is contingent upon the development of a site cleanup, or remedial action plan. The plan could include cleanup measures such as properly covering the site with soil or vegetation, pumping out contaminated groundwater, and purifying and returning the groundwater to the underground aquifer. One state, Oklahoma, does not require the development of a cleanup or remedial action plan. Instead, the state requires the original site be properly closed with a final cover or that the site owner post a bond to ensure final closure.

Pennsylvania has approved expansions at three NPL sites and a fourth is pending. The state has a written policy that requires site owners to correct any violations, or to sign consent orders or decrees, or agreements to correct violations, prior to approving expansions at NPL sites. According to the Chief, Division of Enforcement, Pennsylvania's Department of Environmental Resources, the state can deny permits if an owner intentionally violated state environmental laws or if approval would interfere with site cleanup. Colorado, which has approved one expansion and has one pending, also makes cleanup a contingency for approval according to the Solid Waste Section Chief in Colorado's Department of Health. Wisconsin's approval of the NPL expansion application was contingent upon cleanup of the original site, according to the Chief, Environmental Response Unit of Wisconsin's Department of Natural Resources. This official estimated the cleanup effort cost the landfill owner \$17 million.

SECTION 4

NON-NPL MUNICIPAL LANDFILLS REQUIRING
CLEANUP UNDER STATE PROGRAMS

NUMBER OF NON-NPL MUNICIPAL LANDFILLS
REQUIRING CLEANUP

State hazardous waste programs can be used for a number of cleanup activities, including responding to emergency incidents, short-term removals, and long-term remedial action. Officials in 8 states told us they have identified 116 municipal landfills not on the NPL that require cleanup, or long-term remedial action, under state hazardous waste programs. As shown in table 4.1, two states--Minnesota and Virginia--have identified 82, or about 70 percent, of these 116 municipal landfills requiring cleanup under state hazardous waste programs. Of the 116 landfills, 65 of them are operating and the remaining 51 are inactive or closed. Minnesota and Virginia account for 59, or about 90 percent, of the operating municipal landfills.

Table 4.1: Non-NPL Municipal Landfills Requiring Cleanup Under State Programs as of October 1988

<u>State</u>	<u>Operating</u>	<u>Inactive/closed</u>	<u>Total</u>
Arkansas	0	1	1
California	4	8	12
Florida	0	1	1
Illinois	1	8	9
Minnesota	31	10	41
North Carolina	0	9	9
South Carolina	1	1	2
Virginia	<u>28</u>	<u>13</u>	<u>41</u>
Total	<u>65</u>	<u>51</u>	<u>116</u>

Officials in the remaining 42 states told us they have not identified municipal landfills requiring cleanup under state programs. We found that these states varied in terms of (1) funding availability to pay for the cleanup of non-NPL sites and (2) the extent to which site investigations had been completed to determine the need for cleanup. One state--Texas--has a state-funded program to clean up non-NPL sites and has also identified sites requiring cleanup. However, Texas has not identified any municipal landfills requiring cleanup.

As shown in table 4.2, officials in 30 of the 50 states told us they have funding available to clean up non-NPL sites, and 9 of the 30 told us they have identified sites requiring cleanup. Funding sources for non-NPL cleanups include federal, state, and

local governments and responsible parties.¹ In the 12 states with funding, but where sites investigations have not yet been completed, over 226 municipal landfills--both operating and inactive or closed--are being studied to determine if cleanup is necessary. In the 20 states without funding, 19 states have not yet identified sites requiring investigation to determine if cleanup is necessary. One state, Montana, has developed a list of sites based on preliminary investigations--including 11 municipal landfills--which require further study to determine if cleanup is necessary. Montana's hazardous waste project officer told us that funding will be available in July 1989 to further investigate sites and initiate cleanup actions at non-NPL municipal landfills.

Table 4.2: Status of State Programs to Clean Up Non-NPL Sites as of October 1988

<u>Status</u>	<u>Number of states</u>
State funding available, and sites identified as requiring cleanup	9
State funding available, but site investigations are not complete to determine if cleanup is necessary	12
State funding available, but no sites identified for investigation to determine need for cleanup	9
No state funding available, but site investigations are not complete to determine if cleanup is necessary	1
No state funding available, and sites not yet identified for investigation to determine need for cleanup	<u>19</u>
Total	<u>50</u>

¹Data on cleanup progress and funding sources at non-NPL sites are contained in a draft report entitled Hazardous Waste Sites: State Cleanup Progress and Its Implications for Federal Policy (GAO/RCED-89-164), which is currently under final review within GAO.

EXPANDING MUNICIPAL LANDFILLS
REQUIRING CLEANUP

As discussed previously, we identified 116 municipal landfills requiring cleanup under state hazardous waste programs. Of the 116 sites, 12 of them sought state approval to expand in Minnesota during the 2-year period from October 1986 to October 1988. As of October 1988, Minnesota's Pollution Control Agency had not yet decided on the 12 applications, and all were pending state approval or denial. The Assistant Director of the Agency's Groundwater and Solid Waste Division told us that applications for expansions at these sites are occurring because many landfills in Minnesota are reaching capacity and additional space is needed. The assistant director said that even though the original sites have caused problems, expansions could be approved if applicants develop corrective action plans to clean up the original sites.

SECTION 5

OTHER OPERATING AND EXPANDING
MUNICIPAL LANDFILLS

Nationwide, 7,575 municipal landfills, neither on the NPL nor requiring cleanup under state hazardous waste programs, were operating in 49 states¹ as of October 1988. For 42 of the states, we were able to obtain data on the number of municipal landfills seeking expansions between October 1986 and October 1988.² In the remaining eight states, solid waste officials informed us that such data are not readily available. The 42 states, as shown in table 5.1, received 640 expansion applications. Of these applications, 396 were approved, 172 are pending, and 72 were denied.

Table 5.1: Operating Municipal Landfills as of October 1988, and Status of Expansion Applications Received Between October 1986 and October 1988

<u>State</u>	<u>Operating municipal landfills^{a,b}</u>	<u>Applications received</u>	<u>Status of application</u>		
			<u>Approved</u>	<u>Pending</u>	<u>Denied</u>
Alabama	122	6	2	3	1
Alaska	700	c	c	c	c
Arizona	80	1	1	0	0
Arkansas	88	10	6	2	2
California	344	7	7	0	0
Colorado	200	5	4	0	1
Connecticut	98	29	10	14	5
Delaware	3	3	3	0	0
Florida	170	20	20	c	c
Georgia	191	c	c	c	c
Hawaii	15	3	1	0	2
Idaho	140	5	2	3	0
Illinois	132	3	2	0	1

(continue)

¹Washington's Department of Ecology was unable to provide us data on the number of operating municipal landfills in Washington because, according to a Solid and Hazardous Waste Program Section Supervisor, local health departments maintain permit records. The department is conducting a study to obtain this information.

²Kentucky's Department for Environmental Protection was able to provide us data on the number of operating municipal landfills and the number of expansion applications approved and denied. However, data were not available on the number of applications pending as of October 1988.

<u>State</u>	<u>Operating municipal landfills^{a,b}</u>	<u>Applications received</u>	<u>Status of application</u>		
			<u>Approved</u>	<u>Pending</u>	<u>Denied</u>
Indiana	76	27	8	16	3
Iowa	84	8	8	0	0
Kansas	138	8	5	3	0
Kentucky	80	14	12	c	2
Louisiana	35	23	12	5	6
Maine	200	0	0	0	0
Maryland	41	9	2	7	0
Massachusetts	174	c	c	c	c
Michigan	80	77	54	7	16
Minnesota	34	3	1	2	0
Mississippi	125	3	3	0	0
Missouri	80	32	13	14	5
Montana	133	2	2	0	0
Nebraska	38	4	0	4	0
Nevada	100	0	0	0	0
New Hampshire	65	c	c	c	c
New Jersey	60	6	3	3	0
New Mexico	195	5	2	3	0
New York	217	c	c	c	c
North Carolina	119	58	41	15	2
North Dakota	97	c	c	c	c
Ohio	119	c	c	c	c
Oklahoma	122	31	15	5	11 ^d
Oregon	100	20	15	5	0
Pennsylvania	75	73	54	13	6
Rhode Island	10	0	0	0	0
South Carolina	70	5	5	0	0
South Dakota	113	3	0	3	0
Tennessee	126	16	15	1	0
Texas	934	38	17	21	0
Utah	154	4	1	3	0
Vermont	67	5	0	5	0
Virginia	328	20	20	0	0
Washington	c	c	c	c	c
West Virginia	47	10	8	0	2
Wisconsin	775	40	20	13	7
Wyoming	<u>81</u>	<u>4</u>	<u>2</u>	<u>2</u>	<u>0</u>
Total	<u>7,575</u>	<u>640</u>	<u>396</u>	<u>172</u>	<u>72</u>

^aWe defined a municipal landfill as one that accepts household waste. Because some states have not yet upgraded or closed all open dumps, some of the landfills identified may include open dumps.

^bReflects either actual or estimated numbers provided by states.

^cData not available.

^dIncludes two expansion applications that were denied, and nine that were returned to their originator.

As also shown in table 5.1, the number of operating municipal landfills varies considerably and ranges from a low of 3 in Delaware to a high of 934 in Texas. The number of expansion applications received also varies widely from none in Maine, Nevada, and Rhode Island to a high of 77 in Michigan. Delaware received expansion applications from all three of its operating municipal landfills. Michigan received 77 applications from 80 municipal landfills, and Pennsylvania received 73 applications from 75 municipal landfills. In Michigan and Pennsylvania, some of these applications represent multiple expansions at the same sites. Solid waste officials in Michigan and Pennsylvania stated that reasons for the high rate of expansion applications in their respective states include the high demand for additional space, the difficulties in siting new landfills, and state requirements for municipal landfill planning. The Program Manager of Delaware's Department of Natural Resources and Environmental Control told us Delaware has received expansion applications from all three of the state-owned landfills because permitted disposal areas within the landfills have reached capacity. The state issues separate permits for parcels, or cells, within the landfills, and once these permitted cells are filled, applications for additional cells must be submitted for review and approval.

SECTION 6

PUBLIC PARTICIPATION AND PAST OPERATING RECORD

PUBLIC PARTICIPATION

RCRA requires EPA to develop and publish minimum guidelines for public participation in states' solid waste programs. EPA's guidelines provide that states hold public hearings to solicit public reaction and recommendations if states determine there is a significant degree of public interest. However, states are not required to adopt these guidelines as part of their permitting procedures for solid waste facilities because the guidelines are voluntary.¹ Even so, to answer the question on whether states provide for public participation, we used EPA's guidelines. States that told us they provide the public an opportunity, through hearings or some other public forum, to participate in the permitting process, were classified as meeting EPA's guidelines. States that told us they do not provide this opportunity were classified as not meeting the guidelines.

Table 6.1: States Providing the Public an Opportunity to Participate in Permitting Decisions at the Time of Our Telephone Survey

	<u>Public participation</u>		<u>Total</u>
	<u>Do provide</u>	<u>Do not provide</u>	
States that have processed applications for NPL municipal landfill expansions	10	0	10
States that have not processed applications for NPL municipal landfill expansions	<u>36</u>	<u>4</u>	<u>40</u>
Total	<u>46</u>	<u>4</u>	<u>50</u>

Forty-six states, as shown in table 6.1, including the 10 states that processed applications for NPL municipal landfill

¹Although states are not required to adopt these guidelines, they are not eligible for federal financial assistance for their solid waste programs until the guidelines are adopted. Financial assistance to the states was terminated in 1981.

expansions, provide for public participation to consider citizens' views. The remaining four states do not provide for public participation, according to solid waste officials in these states.

Solid waste officials in all 10 states that processed applications for the NPL municipal landfill expansions told us their states can hold hearings or public meetings. However, states vary as to when they hold these public forums. Pennsylvania and Indiana will hold a hearing at the request of any one person, while Wisconsin will hold a hearing only at the request of six people, a town, or a municipality. As opposed to hearings, Oklahoma holds meetings to obtain the public's opinion.

According to officials in 36 of the 40 states that did not receive applications for NPL municipal landfill expansions, the public is provided opportunities to participate in the permitting process. For example, New York requires public review of the permit application and participation in the permitting process. New Jersey also provides an opportunity for public review and comment during the permit review process, and hearings are announced and held. Louisiana also holds hearings but on a case-by-case basis. Rather than hold hearings, Iowa may host public meetings, and Nevada schedules town or county commission meetings.

Officials in the other four states told us that their states generally do not provide the public an opportunity to participate in permitting decisions. According to an Environmental Engineer of the Hawaii Environmental Protection and Health Services Division, public hearings are not held if a landfill operator is seeking a permit to dispose of solid waste in an area zoned for landfills. The state of North Carolina also does not provide for public participation. The Chief of North Carolina's Department of Human Resource's Solid Waste Branch told us that public participation may or may not be provided for at the local level--it would depend on whether local governments provided for local participation in the zoning process. The Manager of Idaho's Policy and Standards Section, Hazardous Materials Bureau, said the state provides no opportunity for public involvement when it considers municipal landfill permit applications. New Mexico currently does not require a permit program for municipal landfills.² As a result, an

²Under RCRA, New Mexico is required to have a permit program or other system of prior approval for facilities, such as municipal landfills, that may receive household hazardous waste or hazardous waste from small quantity generators. RCRA did not provide EPA with authority to take enforcement action against facilities that do not meet the existing 1979 criteria. However, as discussed in section 7, EPA is in the process of revising its 1979 criteria. When these criteria are finalized, EPA will have the authority to enforce the new criteria.

Environmental Scientist in New Mexico's Health and Environment Department told us there is no opportunity for the public to get involved. Proposed state municipal landfill regulations in New Mexico would require permits and provide for public participation.

PAST OPERATING RECORD

Solid waste officials in 43 states, as shown in table 6.2, including 9 of the 10 states that processed applications for NPL municipal landfill expansions, consider the owner/operators' past operating records. Solid waste officials in the remaining seven states told us their states do not consider the owner/operators' past histories.

Table 6.2: States Considering the Owner/Operators' Past Operating Records in Permitting Decisions at the Time of Our Telephone Survey

	<u>Past operating record</u>		<u>Total</u>
	<u>Do consider</u>	<u>Do not consider</u>	
States that have processed applications for NPL municipal landfill expansions	9	1	10
States that have not processed applications for NPL municipal landfill expansions	<u>34</u>	<u>6</u>	<u>40</u>
Total	<u>43</u>	<u>7</u>	<u>50</u>

RCRA and federal regulations are silent on whether the past operating record of a facility should be considered by a state when a municipal landfill application is received and reviewed. However, solid waste officials in 9 of the 10 states that processed applications for NPL municipal landfill expansions told us their states consider the owner/operators' past operating records in permitting decisions. If sites are not in compliance with state environmental regulations, the states would deny an expansion application. However, approval can be made contingent upon the development and implementation of a site cleanup plan or some other form of corrective action. The tenth state, Oklahoma, does not.

The Chief, Division of Enforcement of Pennsylvania's Department of Environmental Resources, told us that Pennsylvania does consider owner/operators' past operating records and that the state has a policy that allows the state to deny an expansion application if state environmental laws are being violated, or if

the expansion would interfere with cleanup. Expansions are approved when the state determines that the landfill is in compliance with state regulations.

According to the Assistant Director, Groundwater and Solid Waste Division of Minnesota's Pollution Control Agency, when a landfill owner/operator applies for an expansion, he or she must demonstrate that the original landfill is in compliance with state rules and regulations. If the landfill was causing environmental problems, the owner/operator would be required to initiate corrective action prior to receiving approval for the expansion. Solid waste officials in the other states also told us that landfills in their states have to be in compliance with state regulations. If problems are found, cleanup is made a contingency for approval of the expansion permit. In Oklahoma, a Senior Environmental Engineer of the Solid Waste Division told us the state does not consider past operating records because there is no requirement in state law or regulation to do so.

Of the remaining 40 states that did not receive applications for NPL municipal landfill expansions, 35 told us past operating records are considered. In general, states consider the records to ensure existing landfills are in compliance with state regulations. If problems are found, corrective action is required. For example, Ohio is required to consider a municipal landfill's past operating experience and the owner/operator's record of compliance; however, if a municipal landfill is on the NPL, it is not by itself a basis for denying a permit application for expansion. In Illinois, the state assesses all sites requesting permits to expand, and it will not approve permit applications if the owner/operators are in violation of state regulations.

Officials in the remaining six states, however, told us past operating records are not considered when reviewing expansion applications. An Environmental Scientist in Alabama's Department of Environmental Management said that because there are no state requirements to consider the owner/operators' past operating records, hearing officers will not always allow the records to be considered. An Environmental Engineer in Hawaii's Environmental Protection and Health Services Division and an Environmental Specialist in Nebraska's Department of Environmental Control told us that operating records do not play a major factor in approving expansion permits. The Program Manager of the Solid Waste Management Program in Georgia's Department of Natural Resources and the Solid Waste Unit Manager of Arizona's Department of Environmental Quality also told us their respective departments do not take the past operating records into account because there are no requirements in state laws or regulations to do so. However, facilities are required to be in compliance with state regulations. In reality, municipal landfills owned by cities or counties are not always in compliance, yet expansions are often approved by the departments. These landfills are often owned by

rural communities that cannot afford to fully comply. A New Mexico Environmental Scientist in the Health and Environment Department told us the state does not review past operating records because the state does not require permits for municipal landfills.

SECTION 7

EPA'S PROPOSED CRITERIA FOR MUNICIPAL
LANDFILLS AND OBSERVATIONS

EPA'S PROPOSED CRITERIA
FOR MUNICIPAL LANDFILLS

In 1984, the Congress enacted very prescriptive RCRA amendments. One amendment directed EPA to study the extent to which landfills and other facilities were protecting human health and the environment from groundwater contamination. The amendment required EPA to study the adequacy of its 1979 minimum criteria and to revise the criteria for facilities that receive household hazardous waste and small quantity generator waste. The Congress directed EPA to make this study because it was concerned with large amounts of household hazardous waste and small quantity generator hazardous waste being disposed of at facilities that may not be suited to receive such waste.

In response to the 1984 amendments, EPA studied and concluded that the 1979 criteria for municipal landfills were not adequate to protect human health and the environment. As a result, EPA, 4 years later, proposed new minimum criteria for operating municipal landfills that are more specific than the original general standards EPA established in 1979. As shown in table 7.1, the proposed new minimum criteria cover four main areas.

Table 7.1: Existing and Proposed Minimum Municipal Landfill
Criteria

<u>Existing 1979 Criteria</u>	<u>Proposed August 1988 Criteria</u>
<ul style="list-style-type: none">o General environmental performance standards.	<ul style="list-style-type: none">o Specific location restrictions.o Specific operating criteria addressing day-to-day activities and long-term care.o Specific design criteria to meet performance standards.o Groundwater monitoring and corrective action requirements.

As part of its basis for proposing new minimum municipal landfill criteria, EPA, in 1986 surveyed states to determine the stringency of their municipal landfill regulations and in 1988 did a supplemental review of certain provisions of state regulations. EPA found that design and operating standards in the states varied greatly--about half the states required liners, contaminated water control, or methane gas control or monitoring, and about three-fourths of the states required groundwater monitoring at operating municipal landfills. As a result of these findings, EPA concluded that operating municipal landfills nationwide may pose a threat and may not adequately protect human health and the environment.

EPA is currently analyzing public comments as a result of its August 30, 1988, proposed rulemaking. EPA anticipates modifying its proposal as a result of the comments and finalizing the revised criteria in late 1989. After the criteria are finalized, states will have 18 months to revise their municipal landfill programs in accordance with the new criteria. EPA then must determine if states have adequately implemented the revised criteria. If EPA determines that states have not adequately implemented the new criteria, EPA can inspect and take enforcement action against owner/operators for not having adequate environmental safeguards at operating municipal landfills, including expansions.

OBSERVATIONS

In its 1986 survey and 1988 supplemental review of state regulations for municipal landfills, EPA found that state regulations vary greatly and that operating municipal landfills nationwide may pose a threat because they may not adequately protect human health and the environment. Because state regulations vary widely in stringency, some of the municipal landfills that sought approval to expand, as identified in sections 3, 4, and 5 of this briefing report, may pose a threat to the public health and the environment. However, EPA has proposed new minimum criteria that would require location, design, and operating safeguards for municipal landfills, including expansions. Some of the criteria, such as operating criteria addressing day-to-day activities and long-term care, and groundwater monitoring and corrective action requirements, would apply retroactively to these expanding landfills, as well as any other landfills. Some location restrictions and design criteria, however, would only apply to landfills and expansions built after the criteria are finalized. When finalized, and if EPA takes appropriate measures against owner/operators not having the required safeguards, operating municipal landfills and expansions at these landfills should be safer and result in less of an environmental threat in the future than currently.

MAJOR CONTRIBUTORS TO THIS BRIEFING REPORT

RESOURCES, COMMUNITY, AND ECONOMIC
DEVELOPMENT DIVISION, WASHINGTON, D.C.

Richard L. Hembra, Director, Environmental Protection Issues
(202) 275-5489

Peter Guerrero, Associate Director

Patricia D. Moore, Assistant Director

Chester F. Janik, Assignment Manager

DALLAS REGIONAL OFFICE, DALLAS, TEXAS

Robert C. Gorman, Regional Assignment Manager

Marcia Brouns McWreath, Evaluator-in-Charge

Jerilyn Green, Evaluator

(089438)