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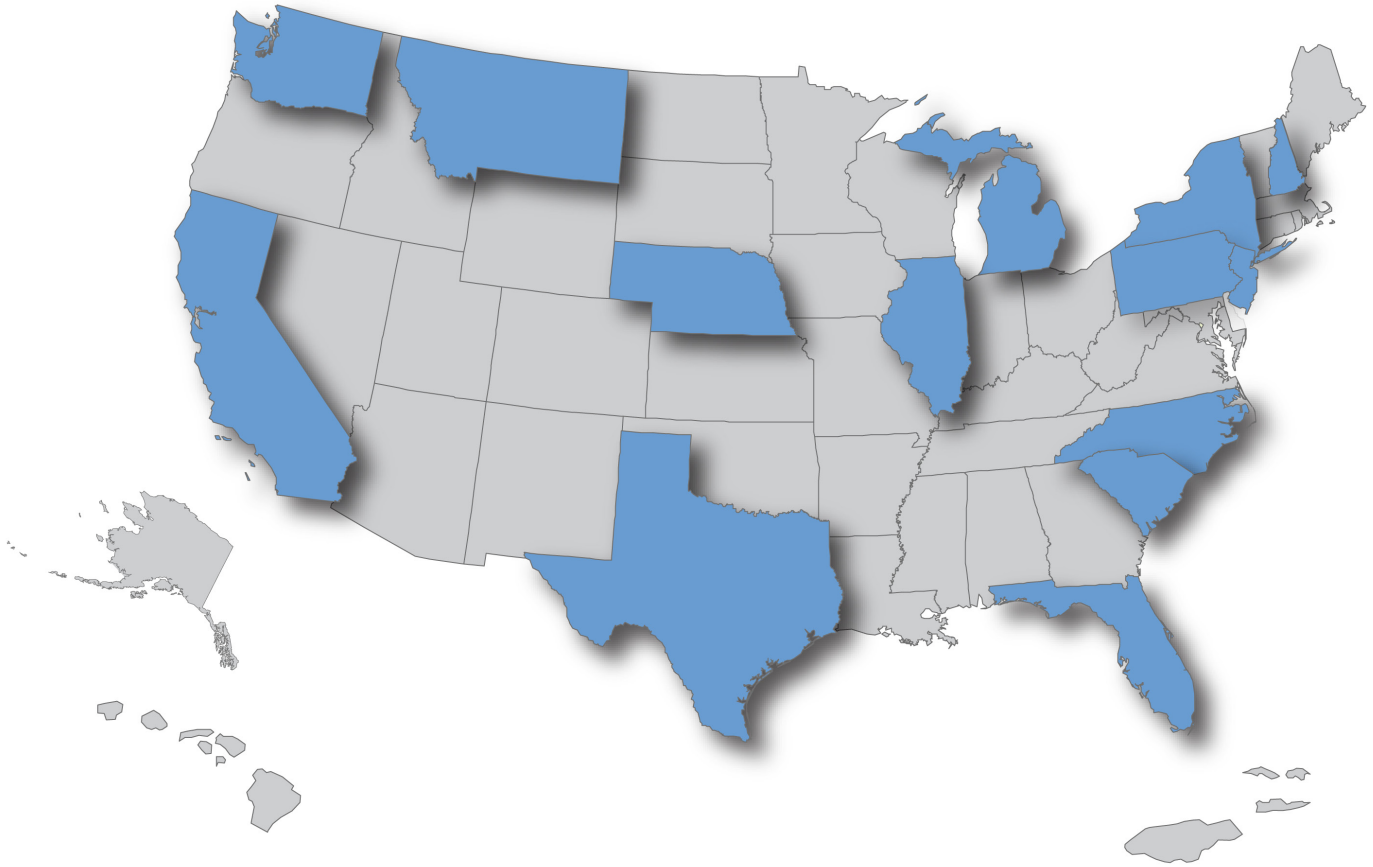
The National LUST Cleanup Backlog:
A Study of Opportunities



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THE NATIONAL LUST CLEANUP BACKLOG: A STUDY OF OPPORTUNITIES

STATE SUMMARY CHAPTER: NEW YORK

Office of Solid Waste and Emergency Response
Office of Underground Storage Tanks
September 2011

LIST OF ACRONYMS

BOA	Brownfields Opportunity Area
DEC	New York Department of Environmental Conservation
EPA	U.S. Environmental Protection Agency
ESA	Expedited Site Assessment
FY	Fiscal Year
LUST	Leaking Underground Storage Tank
MNA	Monitored Natural Attenuation
MSA	Multi-Site Agreement
MTBE	Methyl Tertiary Butyl Ether
NA	Not Applicable
RP	Responsible Party
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Leaks from underground storage tanks (USTs) threaten America's groundwater and land resources. Even a small amount of petroleum released from a leaking underground storage tank (LUST) can contaminate groundwater, the drinking water source for nearly half of all Americans. In surveys of state water programs, 39 states and territories identified USTs as a major source of groundwater contamination.[2] As the reliance on our resources increases due to the rise in population and use, there is a correspondingly greater need to protect our finite natural resources.

From the beginning of the UST program to September 2009, more than 488,000 releases were confirmed from federally-regulated USTs nationwide. Of these confirmed releases needing cleanup, over 100,000 remained in the national LUST backlog. These releases are in every state, and many are old and affect groundwater. To help address this backlog of releases, the U.S. Environmental Protection Agency (EPA) invited 14 states to participate in a national backlog characterization study.

ANALYSIS OF NEW YORK DATA

New York's Department of Environmental Conservation (DEC) has made significant progress toward reducing its LUST cleanup backlog. As of March 2009, DEC had completed 24,225 LUST cleanups, which is 91 percent of all known releases in the state. At the time of data collection, there were 2,458 releases remaining in its backlog.[6] To most effectively reduce the national cleanup backlog, EPA believes that states and EPA must develop backlog reduction strategies that can be effective in states with the largest backlogs. EPA invited New York to participate in its national backlog study because New York had one of the ten largest backlogs in the United States.[7]

In this chapter, EPA characterized New York's releases that have not been cleaned up, analyzed these releases based on categories of interest, and developed potential opportunities for DEC and EPA to explore that might improve the state's cleanup progress and reduce its backlog. Building on the potential cleanup opportunities identified in the study, EPA will continue to work with DEC to develop backlog reduction strategies.

In New York, as in every state, many factors affect the pace of cleaning up releases, such as the availability and mechanisms of funding, statutory requirements, and program structure. The recent economic downturn also has had an impact on the ability of many states to make progress on cleanups.

New York LUST Data By the Numbers[1]

National Backlog Contribution	2.4%
Cumulative Historical Releases	26,683
Closed	24,225/91%
Open	2,458/9%
Stage of Cleanup[3]	*Data not available*
Media Contaminated[4]	
Groundwater	1,012/41%
Soil	1,220/50%
Other	30/1%
Unknown[5]	196/8%
Median Age of Open Releases	10.7 years

1 Data were provided in March 2009 by DEC staff and are not identical to the UST performance measures found on EPA's website, available at: www.epa.gov/oust/cat/camarchv.htm.

2 EPA, *National Water Quality Inventory: 2000 Report*, pp. 50-52. www.epa.gov/305b/2000report/chp6.pdf.

3 Stage of cleanup could not be determined based on available data.

4 Data on media contamination is based on the initial spill report and is not routinely updated. The percentage of releases with groundwater contamination is therefore understated.

5 Unknown media releases include those releases where the media is unknown as well as those releases where, based on available data, it was not possible to identify the media contaminated.

6 EPA tracks individual releases rather than sites in its performance measures. Therefore, the analyses in this report account for numbers of releases, not sites.

7 New York had one of the 10 largest backlogs at the time the state was chosen to participate in this study, in 2006. As of 2009, New York is no longer one of the top 10 contributors to the national backlog.

EPA included potential cleanup opportunities in this report even though current circumstances in New York might make pursuing certain opportunities challenging or unlikely. Also, in some cases, DEC is already using similar strategies as part of its ongoing program. The findings from the analysis of DEC's data and the potential cleanup opportunities are summarized below in eight study areas: status of cleanup, media contaminated, state regional backlogs, cleanup financing, presence of methyl tertiary butyl ether (MTBE) contamination, number of releases per affiliated party, geographic clusters, and data management.

Status of Cleanup *(see page NY-11 for more details)*

New York Finding	Potential Opportunity	Releases
56 percent of releases are 10 years old or older.	Use a systematic process to explore opportunities to accelerate cleanups and reach closure, such as: • expediting site assessments; • periodically reviewing release-specific treatment technologies; and • using enforcement actions if cleanup has stalled.	1,385

Releases in New York are taking a long time to be cleaned up and, while DEC did not provide stage of cleanup data, if New York is similar to other states in this study, EPA would expect to find a significant number of releases that have not started remediation. There are several reasons why many releases in the backlog are old including: many releases are technically complex and therefore take a long time to address; the responsible party (RP) has not performed required cleanup actions; and many releases are low priority and remain unaddressed due to DEC directing its limited resources to higher priority cleanups. EPA recognizes DEC's interest in addressing high priority releases first. Nevertheless, EPA believes it is important for DEC to explore opportunities to accelerate cleanups at older releases and to make progress toward bringing all releases to closure.

Media Contaminated *(see page NY-13 for more details)*

New York Finding	Potential Opportunity	Releases
32 percent of releases: • contaminate groundwater; and • are 10 years old or older.	Systematically evaluate cleanup progress at old releases with groundwater impacts and consider alternative cleanup technologies or other strategies to reduce time to closure.	795
50 percent of releases are documented as contaminating soil only.[8]	Explore options for moving releases forward, such as: • expediting site assessments of all releases to ensure that all releases are ranked; • ensuring releases with immediate risks are actively being worked on; and • making progress toward closure for all sites.	1,220

Releases contaminating groundwater have always been the largest part of the national backlog. Although DEC's data indicate that only 41 percent of releases contaminate groundwater, DEC acknowledges that the data on media contamination are not routinely updated. DEC believes that the majority of releases documented as contaminating soil also impact groundwater resources. According to DEC, there is a greater percentage of releases with groundwater contamination than the data indicate. In general, groundwater contamination is more technically complex to remediate and takes longer to clean up than soil contamination. For old, complex cleanups where long-term remediation is underway, EPA believes it is important for DEC to have a system in place for periodic reevaluation of cleanup progress and to reconsider whether the cleanup technology being used is still optimal.

Even though soil contamination is typically easier to remediate than groundwater contamination, many releases documented as impacting only soil are still unaddressed. These releases might remain unaddressed because they are lower priority releases or because their contamination extends to groundwater, making the cleanup more complex. Nevertheless, EPA believes DEC should continue to make progress toward closure for all cleanups.

8 DEC believes that the majority of releases documented as contaminating soil also impact groundwater.

State Regional Backlogs *(see page NY-14 for more details)*

New York Finding	Potential Opportunity	Releases
The release age and media contamination of New York's backlog vary among DEC's regions.	Develop region-specific strategies for moving releases toward remediation and closure.	Variable number of releases[9]

EPA has identified differences in the characteristics of the backlog among DEC's nine regions. Differences in the management and administration of remedial actions might be causing some of the differences in cleanup outcomes. Other external factors such as geologic and geographic differences might also contribute to the differences within the backlog. For example, areas of higher population usually result in areas of larger backlogs. Property transfers can provide incentives for cleanup, particularly in urban areas. Differences in geology and terrain can make releases in one part of the state more difficult to clean up than releases in other parts of the state. These differences might reveal opportunities for region-specific backlog reduction. Beginning in 2004, DEC worked to address regional backlogs, including those in DEC Region 2 (New York City), closing several thousand releases and in DEC Region 1 (Long Island) and DEC Region 3 (the Lower Hudson Valley). DEC can continue work with its regions to address their specific backlog issues and facilitate the sharing of information and best practices among the regions. DEC stated that each of the above initiatives resulted from increased resources made available from outside normal program parameters.

9 Opportunities marked as "variable number of releases" relate to programmatic opportunities and affect an unknown number of releases, potentially including all open releases.

Cleanup Financing *(see page NY-16 for more details)*

New York Finding	Potential Opportunity	Releases
More than half of the releases where cleanup is believed to be privately financed are older than 10 years of age.	Explore opportunities to ensure that privately-financed cleanups are completed expeditiously, such as: • providing guidance to RPs; and • pursuing alternative funding mechanisms or enforcement actions for old releases that are stalled.	1,156
DEC's database does not include the type of financing used to clean up a LUST release.	Track financing at all UST facilities and consider having UST insurers notify DEC if a facility's policy is discontinued.	Variable number of releases
46 percent of state-funded cleanups: • have a median age of 19.4 years; • impact groundwater or other media types; and • involve MTBE contamination.	• Reevaluate the current remedial plan at old state-funded cleanups to identify releases where a more cost-effective plan could be implemented. • Increase efforts to enforce RP-lead cleanups or to initiate state-lead cleanups and cost recovery earlier.	127

EPA and state programs are interested in exploring successful financing strategies for completing cleanups quickly. EPA acknowledges that the recent economic downturn has impacted cleanup financing. EPA also believes the availability of funding for cleanup is essential to reducing the backlog, so in addition to this study, EPA is increasing its focus on oversight of state funds as well as conducting a study of private insurance.

The New York Oil Spill Fund was approved by EPA as a financial responsibility mechanism in the state. However, as a practice, the fund only provides financing for releases where the RP is unknown, unwilling, or unable to pay for cleanup. Nearly 90 percent of cleanups in New York are presumed to be privately financed, although DEC does not track the type of financing used by UST owners. More than half of these releases are older than 10 years of age. These privately-financed cleanups offer opportunities for backlog reduction whether through providing guidance to RPs or using enforcement actions at stalled releases, as resources permit. DEC can also continue to encourage RPs and other stakeholders, including municipalities, to pursue alternative public and private funding sources at stalled releases, such as petroleum brownfields grants in the case of low priority releases with no viable RP. DEC can explore opportunities to complete state-funded cleanups, including

reevaluating remedial plans to identify releases where a more cost-effective plan could be implemented.

Presence of MTBE Contamination

(see page NY-18 for more details)

New York Finding	Potential Opportunity	Releases
20 percent of releases have MTBE contamination.	Reevaluate the current remedial plan and utilize optimal remedial technologies for the removal of MTBE.	518
5 percent of releases: • have MTBE contamination; and • contaminate soil only.	When MTBE is identified in a site assessment, move quickly to address MTBE contamination to prevent migration into groundwater.	127

MTBE can be a complicating factor at older LUST releases. As with any release in remediation, DEC should consider having a system in place for regular reevaluation of the cleanup strategy. Although releases with only soil contamination are often of relatively lower risk or priority, EPA believes it is important to act quickly, specifically for releases with MTBE contamination, to prevent migration of the contaminants to groundwater, where they can be more difficult and costly to remediate. Using funds provided by special EPA grants in the early 2000s, DEC has identified spills containing MTBE, taken action to ban its use in New York State, trained remedial project managers in effective source control and remediation, and presented its findings at national forums. As stated above, MTBE contamination has proven to be an expensive and complicated contaminant to remove. DEC has optimized many remedial systems to improve their efficiency and continues to oversee those efforts.

Number of Releases per Affiliated Party

(see page NY-19 for more details)

New York Finding	Potential Opportunity	Releases
11 percent of releases are affiliated with 12 parties each with 10 or more releases.	Explore possibilities for multi-site agreements (MSAs) or enforcement actions with parties affiliated with multiple open releases.	264

EPA analyzed the number of releases per affiliated party to identify the largest potential contributors to the state's cleanup backlog. In New York, 12 parties are each affiliated with 10 or more releases and account for 11 percent of the New York backlog. EPA was able to identify groups of 10 or more releases affiliated with the same spiller name identified in DEC's Spill Incidents database. Each of these names is not necessarily the party financially responsible for the cleanup. DEC has negotiated "global" orders with major petroleum retailers in New York State. DEC and EPA can use these data to identify possible participants for multi-site strategies to clean up groups of releases.

Geographic Clusters

(see page NY-19 for more details)

New York Finding	Potential Opportunity	Releases
24 percent of releases are clustered within a one-mile radius of five or more releases.	Target releases within close proximity for resource consolidation opportunities.	Targeted number of releases[10]

Another multi-site approach that DEC could use is targeting cleanup actions at geographically-clustered releases. This approach might offer opportunities for new community-based reuse efforts, using economies of scale, and addressing commingled contamination. EPA believes that highlighting geographic clusters of releases and working with state and local governments in area-wide initiatives will accelerate DEC's pace of cleaning up releases. EPA intends to work with the states to conduct further geospatial analyses on clusters of open releases in relation to RPs, highway corridors, local geologic and hydrogeologic settings, groundwater resources, and/or communities with environmental justice concerns. These analyses might reveal additional opportunities for backlog reduction.

Data Management

(see page NY-20 for more details)

New York Finding	Potential Opportunity	Releases
Several key data fields are not included, consistently maintained, or routinely tracked in DEC's Spill Incidents database.	Improve database to enhance program management and backlog reduction efforts.	Variable number of releases

Multiple data management limitations prevent a full assessment of New York's backlog and associated strategies for backlog reduction. Because of data limitations, EPA could not analyze the method or stage of release cleanup or the specific type of private financial responsibility mechanism used to pay for the cleanup. Additional improvements to data management could allow for easier overall program management within New York and provide an improved tool for developing strategies

10 Opportunities marked as "targeted number of releases" relate to geographic opportunities that will address a limited number of releases within select designated geographic areas.

to reduce the cleanup backlog. DEC reports that it has begun tracking stage of cleanup and remedial efforts for each release.

CONCLUSION

This chapter contains EPA's data analysis of New York's LUST cleanup backlog and identifies potential opportunities to reduce the backlog in New York. EPA discusses the findings and opportunities for New York, along with those of 13 additional states, in the national chapter of this report. EPA will work with states to develop potential approaches and detailed strategies for reducing the backlog. Development of strategies could involve targeting data collection, reviewing particular case files, analyzing problem areas, and sharing best practices. Final strategies could involve EPA actions such as using additional program metrics to show cleanup progress, targeting resources for specific cleanup actions, clarifying and developing guidance, and revising policies. EPA, in partnership with states, is committed to reducing the backlog of confirmed UST releases and to protecting the nation's groundwater, land, and communities affected by these releases.

PROGRAM SUMMARY

New York LUST Program At a Glance

Cleanup Rate
In fiscal year (FY) 2009, DEC confirmed 924 releases and completed 1,038 cleanups.[11]

Cleanup Financing
Of open releases, 89 percent (2,181 releases) are privately financed.

Cleanup Standards
The program requires cleanup to pre-spill conditions. When this is not possible, generic cleanup levels are used.

Priority System
Releases are prioritized based on risk to receptors.

Average Public Spending on Cleanup
$240,000[12]

Releases per Project Manager
On average, each project manager is responsible for 22 LUST releases.[12]

Administrative Funding (2007)
$2.3 million.[13]

State LUST Program Organization and Administration

The New York Department of Environmental Conservation (DEC) Spill Response Program responds to reports of petroleum and other hazardous material releases from all sources. The average annual number of petroleum spills reported to DEC over a 10-year period is 15,574. The average annual number of leaking underground storage tank (LUST) spills in the same time period is 650. While LUST spills are usually important due to the impacts that they entail to sensitive receptors, DEC has to prioritize all spills based on their importance and impact.

A responsible party (RP) is required to perform a cleanup if contamination and environmental damage remain after the initial containment and recovery. This work may be performed by a qualified contractor hired by the RP. DEC oversees the cleanup process to ensure the actions are protective of public safety, health, and the environment. Nine regional offices are responsible for the implementation of the program.

Cleanup Financing

The New York Oil Spill Fund, within the Office of the State Comptroller, serves as the financial responsibility mechanism for LUST releases in New York. In practice, the fund typically finances releases where the RP is unknown, unwilling, or unable to pay for cleanup. Most releases in New York are expected to be cleaned up with private financing and only 11 percent of open releases (277 releases) and 5 percent of closed releases (1,126 releases) have received state funding. All cleanups, whether state funded or privately financed, receive oversight from state program managers. The state aggressively pursues cost recovery from the parties responsible for releases that the Oil Spill Fund cleans up.

Cleanup Standards

DEC's cleanup goal is restoration of the environment to pre-spill conditions. When cleanup to pre-spill conditions is not feasible, generic cleanup levels that are protective of human health and the environment are used.

Release Prioritization

DEC's spill classification and response categories are used to direct the program's limited resources to the most critical situations. Spills are prioritized based on the threat of explosion, contamination of drinking or surface waters, and the presence and willingness of an RP to conduct the cleanup. Release priority may be upgraded or downgraded based on new information, but the original priority is never downgraded as a result of cleanup activities.

11 Based on FY 2009 *UST Performance Measures End of Year Activity Report*.
12 Estimate provided by DEC staff. LUST releases account for approximately 10 percent of average staff workload. The remaining 90 percent is related to non-LUST spills.
13 This is the estimated total of administrative expenditures for the oversight of LUST releases.

State Backlog Reduction Efforts

DEC has undertaken three initiatives to reduce the backlog in recent years. Beginning in 2004, the Spill Backlog Reduction Initiative identified releases for closure in the five boroughs of New York City. Staff from non-LUST divisions reviewed files and recommended releases for closure. Recommendations were reviewed by project managers, and if they agreed on the determination, the release was closed. Under a second effort beginning in 2005, spill case files were assigned to Superfund managers brought in to assist with file review and recommendations for closure, resulting in 9,000 closures.[14] The third initiative involved contractor support provided by EPA Region 2 to identify LUST releases for closure in DEC Region 1 (Long Island) and Region 3 (the Lower Hudson Valley). This effort began in 2006 and to date has led to the closure of 30 percent (156 releases) of the 528 releases reviewed.

14 This number includes all spills and is not limited to LUST releases.

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ANALYSIS AND OPPORTUNITIES

In this study, EPA analyzed New York's federally-regulated releases that have not been cleaned up (open releases). EPA conducted a multivariate analysis on all of DEC's data.[15] This technique allowed for an objective analysis of multiple release characteristics and allowed EPA to highlight those traits most commonly associated with older releases. Next, EPA divided the open releases into groups that might warrant further attention. EPA used descriptive statistics to examine the distribution of releases by age of release and stage of cleanup and highlighted findings based on DEC's data.[17] EPA then identified potential opportunities for addressing particular groups of releases in the backlog. Many releases are included in more than one opportunity. These opportunities describe actions that EPA and DEC might use as a starting point for collaborative efforts to address the backlog. Although EPA's analysis covered all releases in New York, there are 310 releases that are not included in any of the subsets identified in the findings or opportunities due to the way EPA structured the analysis. These releases might also benefit from some of the suggested opportunities and strategies.

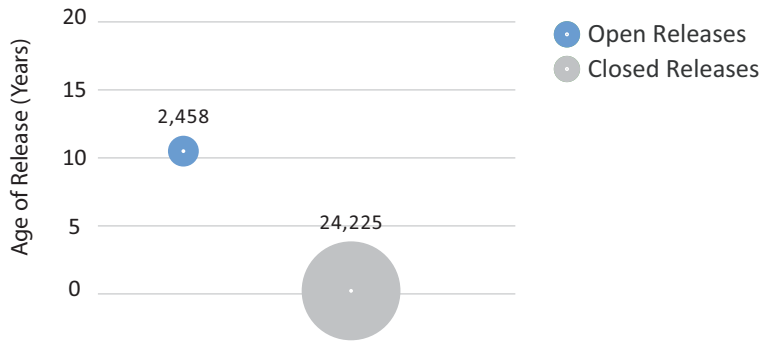
EPA's analyses revealed eight areas of New York's backlog with potential opportunities for its further reduction:

- Status of cleanup
- Media contaminated
- State regional backlogs
- Cleanup financing
- Presence of methyl tertiary butyl ether (MTBE) contamination
- Number of releases per affiliated party
- Geographic clusters
- Data management

STATUS OF CLEANUP

As of March 2, 2009, the New York backlog consisted of 2,458 open releases. EPA analyzed the age of LUST releases and compared open releases to closed releases. New York's releases have an average median age of 10.7 years (Figure 1 to the right). Since New York's LUST program began, the DEC has closed 24,255 releases, half of which were closed in fewer than 0.5 years.[18] The young median age of closed LUST releases might be attributable to the rapid closure of relatively easy to remediate releases, as well as a large number of closed releases where no remedial activities were required and releases that were closed administratively. Under its administrative closure policy, DEC staff consolidates duplicate

Figure 1. Age of Releases, by Status



The white dot at the center of each circle represents the median age of releases. Each circle is labeled with, and scaled to, the number of releases within each status. Included in the release counts and size of circles are 51 closed releases and 11 open releases for which it was not possible to calculate age. These releases are not part of the median age calculation.

LUST Data Source

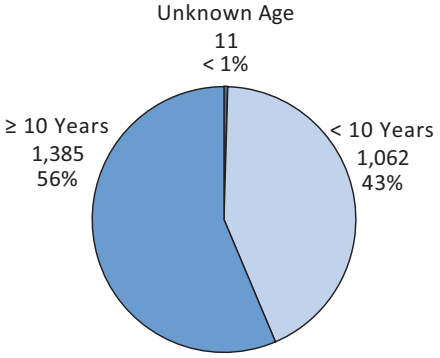
Electronic data for LUST releases occurring between January 1974 and February 2009 were compiled with DEC staff in 2008 and 2009.[16] Data were obtained from DEC's Spill Incidents database and selected based on quality and the ability to address areas of interest in this analysis. Entries to this database were created by the state as part of a call-in spill notification system to track all spills reported in New York. The database does not appear to be designed as a LUST tracking database.

Data Limitation

Stage of cleanup was not identified in this analysis. A data field tracking the stage of cleanup for each release has recently been added to the Spill Incidents database. Most releases are marked as "Response & Containment," which is assigned as the default value in this field. Because this field is not updated regularly, it was not used to identify the stage of cleanup.

15 For a detailed description of the analytic tree method, see Appendix A.
16 For a detailed description of the New York data used in this analysis, see the Chapter Notes section.
17 For a detailed description of release stages, see the Chapter Notes section (Stage of Cleanup Reference Table).
18 Of these releases, 5,295 releases have an age of zero.

Figure 2. Age Distribution of Open Releases



New York Finding
56 percent of releases are 10 years old or older.

Potential Opportunity	Releases
Use a systematic process to explore opportunities to accelerate cleanups and reach closure, such as: • expediting site assessments; • periodically reviewing release-specific treatment technologies; and • using enforcement actions if cleanup has stalled.	1,385

release records into a single record and reports the deleted duplicate records as closed releases. Also, national program policy allows states to report confirmed releases that require no further action at time of confirmation as "cleanup completed." Therefore, some releases are reported as confirmed and cleaned up simultaneously.

DEC has undertaken three initiatives to reduce the backlog by identifying releases that are close to closure through file reviews. These efforts have been successful and resulted in thousands of closures.[19] As shown by New York, states might find opportunities for closure with minimal effort at lower risk releases where little or no remedial work is required to reach closure standards or at releases that have met closure standards but have not finished closure review.

If New York is similar to other states in this study, it might have a significant number of old LUST releases that have not started remediation. Figure 2 to the left shows the backlog of releases and includes 1,385 releases (56 percent of the backlog) that have not been closed, 10 years or more after the release was confirmed. The DEC LUST database does not allow discrimination between stages of cleanup (i.e., Confirmed Release, Site Assessment, and Remediation). However, it is likely that, as in all other states in this study, these 1,385 releases include releases that have not begun assessment, releases that have not begun remediation, and releases that are currently undergoing remediation.

EPA encourages states to streamline the corrective action process, improve data collection, reduce the overall cost of remediation, and move releases more rapidly toward remediation and closure. To assist states and regulators in implementing these objectives, EPA developed its *Expedited Site Assessment* (ESA) guide.[20] The guide explains the overall ESA process as well as specific site assessment tools and methods. The ESA process rapidly characterizes site conditions to help support cost-effective corrective action decisions. ESAs will help identify releases that can be closed with minimal effort or provide all the information needed to move a release into remediation. Conducting site assessments efficiently and quickly could help reduce the backlog by accelerating the pace of cleanup and ultimately decrease overall project costs.

Increasing efficiency and getting releases through the cleanup process as quickly as possible will expedite the reduction of the backlog. DEC should consider establishing a systematic process to evaluate existing releases undergoing remediation and optimize cleanup approaches, including choice of technology. This process might bring releases to closure more quickly. DEC can also consider enforcement actions against RPs that are not moving forward with cleanup.

19 See State Backlog Reduction Efforts in the Program Summary.

20 EPA's 1997 guidance document, *Expedited Site Assessment Tools for Underground Storage Tank Sites: A Guide for Regulators* (EPA 510 B-97-001), is available online at: www.epa.gov/OUST/pubs/sam.htm.

MEDIA CONTAMINATED

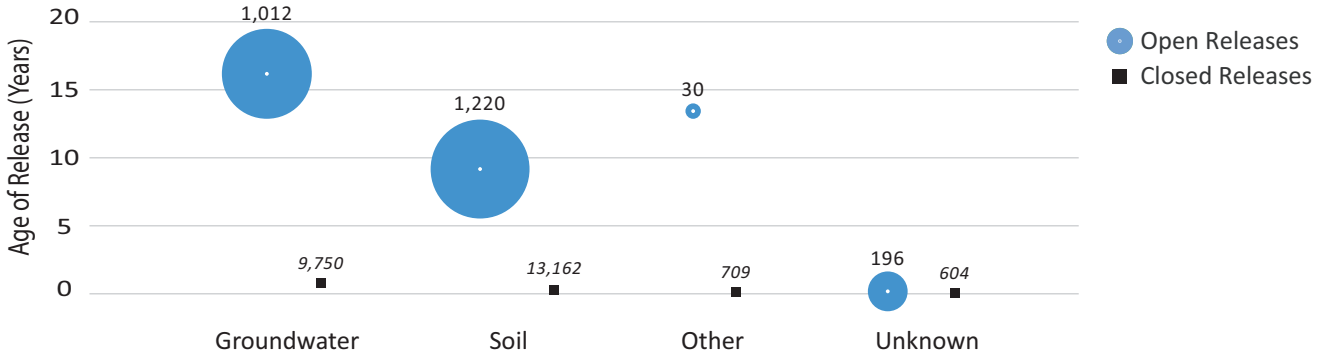
Groundwater is an important natural resource that is at risk from petroleum contamination. Old releases with groundwater contamination make up a large portion of the New York backlog and, according to DEC, the many releases with soil recorded as the only media impacted likely also impact groundwater. In general, groundwater contamination takes longer and is more expensive to clean up than soil contamination. In this study, EPA examined media as a factor contributing to the backlog. The following analysis classified media contamination into four categories: groundwater (1,012 open releases), soil (1,220 open releases), other media, which includes vapor and surface water (30 open releases), and "unknown" media, which includes releases with no media specified (196 open releases).[21]

DEC's data show that in New York, 41 percent of releases (1,012 releases) involve groundwater contamination and have a median age of 16.2 years (Figure 3 below), although DEC anticipates that the actual percentage of releases contaminating groundwater is higher. The closed releases contaminating groundwater have a significantly younger median age of 0.7 years compared to the median age of open releases. Seventy-nine percent of groundwater cleanups (795 releases) are 10 years old or older (32 percent of the total backlog) (Figure 4 below, right). Although it is not possible to determine the stage of cleanup of these releases, these findings indicate that the current backlog includes a large number of releases with groundwater contamination that are not being remediated quickly.

New York Finding
32 percent of releases: • contaminate groundwater; and • are 10 years old or older.

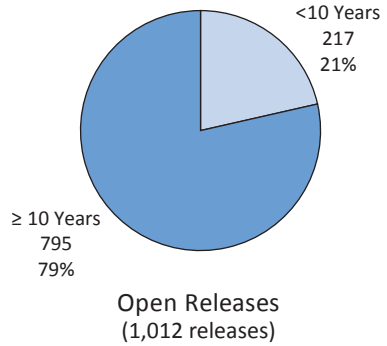
Potential Opportunity	Releases
Systematically evaluate cleanup progress at old releases with groundwater impacts and consider alternative cleanup technologies or other strategies to reduce time to closure.	795

Figure 3. Age of Releases, by Media Contaminated and Open/Closed Status of Cleanup



Squares indicating closed releases are not scaled to the number of releases in that status.

Figure 4. Age Distribution of Open Releases with Groundwater Impacts



Groundwater contamination is typically more complex and difficult to remediate but if DEC could identify opportunities to improve cleanup efficiencies, it might be able to accelerate the pace of cleanups. For example, using a systematic process to evaluate cleanup progress, current contaminant levels, and treatment technologies might move releases through cleanup and to closure faster. In addition, for state-funded cleanups, evaluation of the cleanup progress of releases with groundwater impacts might identify releases where monitored natural attenuation (MNA) can be applied. In these cases, treatment times need to remain reasonable compared to other methods. DEC's cleanup costs might be reduced by applying MNA at active cleanups.

21 For a detailed description of media contamination classifications, see the Chapter Notes section.

New York Finding
50 percent of releases are documented as contaminating soil only.[22]

Potential Opportunity	Releases
Explore options for moving releases forward, such as: • expediting site assessments of all releases to ensure that all releases are ranked; • ensuring releases with immediate risks are actively being worked on; and • making progress toward closure for all sites.	1,220

New York Finding
The release age and media contamination of New York's backlog vary among DEC's regions.

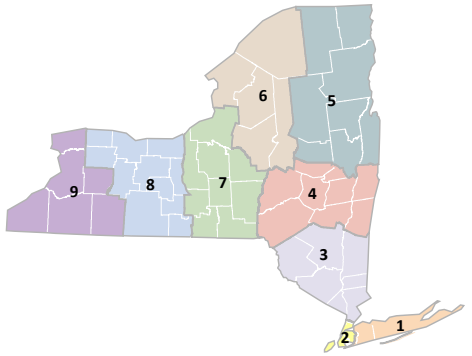
Potential Opportunity	Releases
Develop region-specific strategies for moving releases toward remediation and closure.	Variable number of releases[23]

Releases that contaminate soil only represent a potential threat to groundwater resources and contaminate properties in neighborhoods and communities. In DEC's Spill Incidents database, 50 percent of releases (1,220 releases) are recorded as involving soil-only contamination, and 610 of these soil-impacted releases (50 percent) are 9.3 years or older (Figure 3, page 13). However, data on media contamination are based on the initial spill report and are not routinely updated, and DEC believes that the majority of these releases also impact groundwater resources. Although it is not possible to determine the stage of cleanup using the available data, contaminated soil can typically be cleaned up faster than contaminated groundwater. In general, distinguishing between releases with soil contamination and those with groundwater contamination, encouraging site assessment, and moving forward with remediation could help DEC gather more information about difficult releases and move all releases toward closure, thereby reducing the backlog.[22]

STATE REGIONAL BACKLOGS

EPA analyzed cleanup backlogs within DEC's nine regions to identify patterns and opportunities for targeted backlog reduction strategies within each region. There are significant differences in the size of the backlog and age of release among the nine regions (Figure 5 to the right and Table 1, page 15). Of all releases in the current backlog, 65 percent (1,592 releases) are located in Regions 1, 2, or 3, whereas only 9 percent (216 releases) are located in Regions 5, 7, and 9. However, Regions 6, 7, 8, and 9 have four of the five oldest backlogs, despite their relatively small backlog size (Figure 6, page 15). The variation in release distribution is likely impacted by the large number of USTs located in the densely populated urban centers in Regions 1, 2, and 3, compared with the more sparsely populated areas in the northern part of the state. These urban areas with greater populations might also create greater financial incentives for cleanup due to property transfers. The variation in backlog age among the regions might also be related to differences in administrative processes between the regions. New York also has significant differences in geology across the state. These differences might impact the age of the backlog among the regions and the rate at which the regions can complete cleanups. Region-specific strategies might help reduce the backlog. EPA encourages DEC to look for opportunities to share best practices among its regions and with other states.

Figure 5. Map of DEC Regions



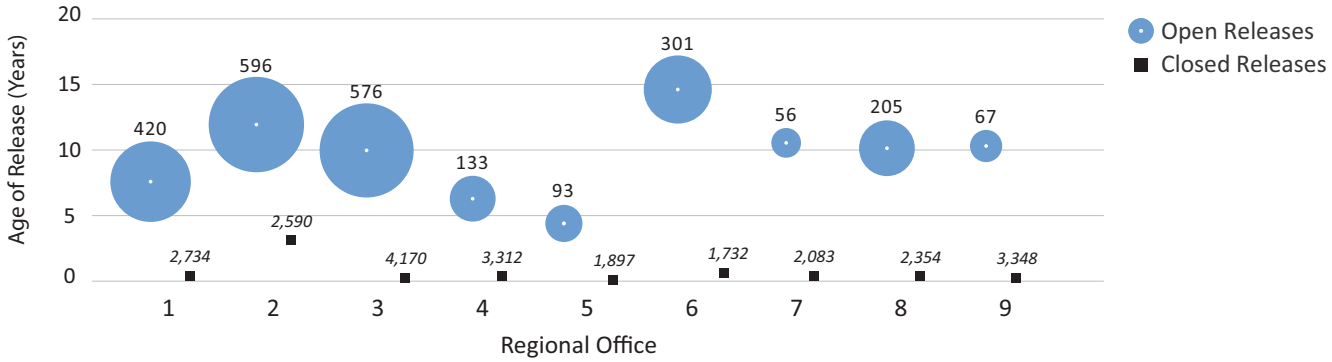
22 DEC believes that the majority of releases documented as contaminating soil also impact groundwater resources.

23 Opportunities marked as "variable number of releases" relate to programmatic opportunities and affect an unknown number of releases, potentially including all open releases.

Table 1. New York Backlog, by DEC Region[24]

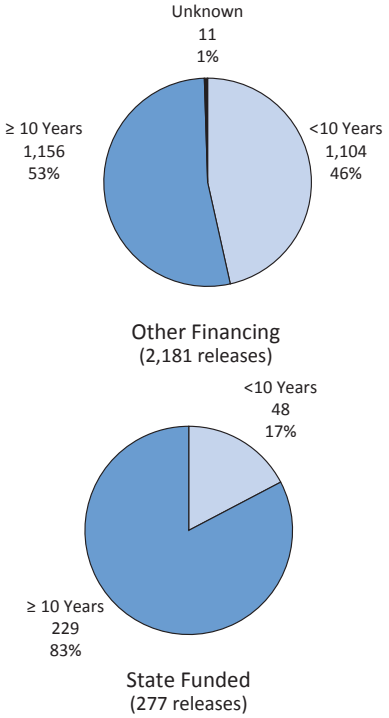
	Region 1	Region 2	Region 3	Region 4	Region 6	Region 7	Region 8	Region 9
State Backlog Contribution	17%	24%	24%	5%	12%	2%	9%	3%
Cumulative Historical Releases	3,154	3,186	4,746	3,445	2,033	2,139	2,559	3,415
Closed	2,734/87%	2,590/81%	4,170/88%	3,312/96%	1,732/85%	2,083/97%	2,354/92%	3,348/98%
Open	420/13%	596/19%	576/12%	133/4%	301/15%	56/3%	205/8%	67/2%
Media Contaminated								
Groundwater	167/40%	266/45%	172/30%	55/41%	188/62%	28/50%	80/39%	30/45%
Soil	210/50%	282/47%	364/63%	52/39%	106/35%	23/41%	103/50%	31/46%
Other	6/1%	4/1%	10/2%	0/0%	2/1%	0/0%	6/3%	2/3%
Unknown	37/9%	44/7%	30/5%	26/20%	5/2%	5/9%	16/8%	4/6%
Median Age of Open Releases	7.7 years	11.9 years	10.0 years	6.4 years	14.6 years	10.7 years	10.3 years	10.4 years

Figure 6. Age of Releases, by DEC Region and Open/Closed Status of Cleanup



24 DEC region is unknown for five open and 11 closed releases, which do not appear in Table 1 or Figure 6.

Figure 7. Age Distribution of Releases, by Cleanup Financing[25]



New York Finding
More than half of the releases where cleanup is believed to be privately financed are older than 10 years of age.

Potential Opportunity	Releases
Explore opportunities to ensure that privately-financed cleanups are completed expeditiously, such as: • providing guidance to RPs; and • pursuing alternative funding mechanisms or enforcement actions for old releases that are stalled.	1,156

CLEANUP FINANCING

EPA and state programs are interested in exploring successful financing strategies for completing cleanups quickly. EPA acknowledges that the recent economic downturn has impacted cleanup financing. EPA also believes the availability of funding for cleanup is essential to reducing the backlog, so in addition to this study, EPA is increasing its focus on oversight of state funds as well as conducting a study of private insurance. To analyze the effects of various types of financing on closure rates in New York, EPA evaluated state fund eligibility and cleanup progress for each release.

Nearly 90 percent of cleanups in New York (2,181 releases) are presumed to be privately financed. However, DEC's database does not track the type of financing used by UST owners. For the purposes of this study, the financing for these releases is considered "other" (Figure 7 to the left). More than half of these releases are older than 10 years of age. It is not possible for EPA to determine the stage of cleanup using the available data. Since many of these cleanups are still open after 10 years or more, some of these cleanups might be stalled. These cleanups offer opportunities for backlog reduction, whether through providing guidance to RPs about moving forward with cleanup or using enforcement actions at stalled releases. DEC could consider encouraging RPs and stakeholders to pursue alternative public and private funding sources, including petroleum brownfields grants in the case of low priority releases with no viable RP. Tracking information, including financing, at all UST facilities and requiring that UST insurers notify DEC if a facility's policy is discontinued would better inform DEC's efforts.

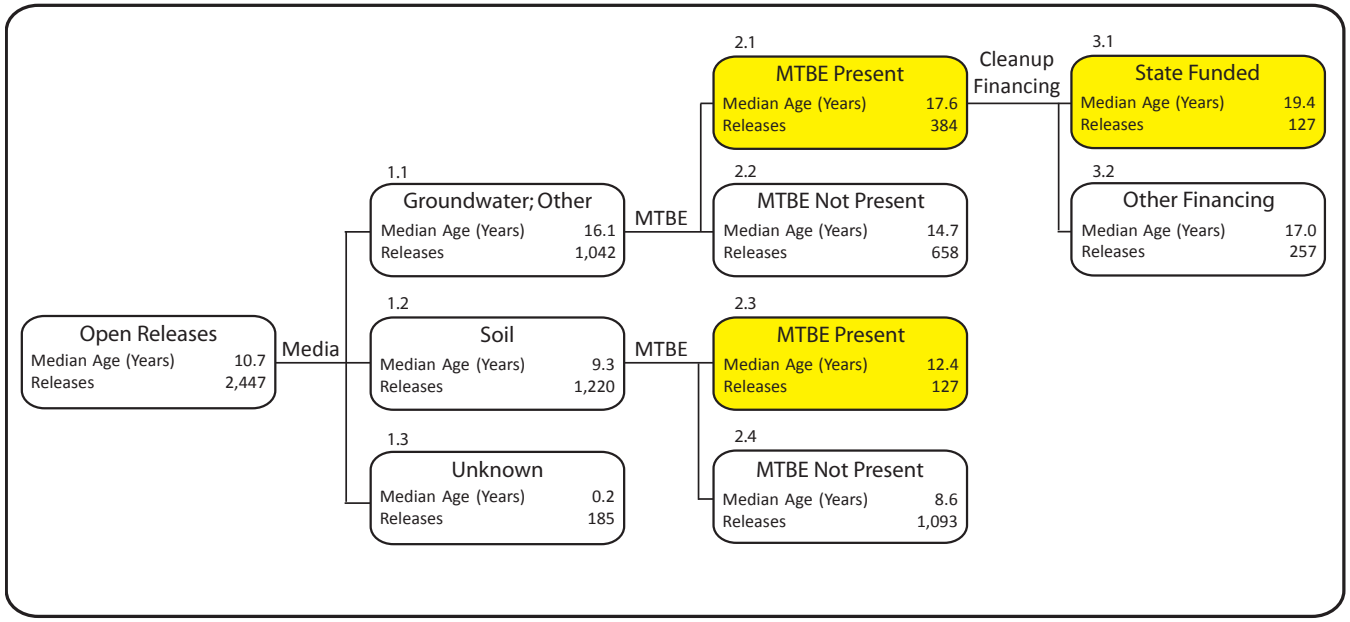
The New York Oil Spill Fund was approved by EPA as a financial responsibility mechanism in the state. However, as a practice, the fund only provides financing for releases where the RP is unknown, unwilling, or unable to pay for cleanup. The Oil Spill Fund has provided funding to clean up 277 releases (11 percent of the backlog) (Figure 7). DEC pursues an aggressive cost-recovery system for cleanups funded by the state so the availability of funds might not impact the New York program as much as other states in this study. As expected due to the type of cleanups funded, these releases tend to be older than privately-financed cleanups. However, enforcing RP-lead cleanups or initiating state-lead and cost-recovery efforts earlier could reduce the number of RPs that are unknown, unwilling, or unable to finance a cleanup and ensure that progress continues for all cleanups. In addition, 46 percent of currently state-funded cleanups (127 releases) are old releases with groundwater impacts where MTBE contamination is present (Figure 8, page 17, Node 3.1, highlighted in yellow). Evaluating current contaminant levels and treatment technologies in use at these releases might identify releases where innovative remediation methods could be implemented to accelerate cleanups.

For non-MTBE cleanups, if a thorough evaluation determines that active remediation is ineffective in reducing contamination, alternative or innovative cleanup technologies such as MNA could be considered as an appropriate remedy.[26] MNA should not be considered a default or presumptive remedy at any contaminated site. However, if used appropriately, this approach could free up state funds for use at other cleanups and could increase the number of releases that DEC is able to address and move toward remediation and closure.

25 There are 208 releases with private financing and 18 state-funded cleanups with unknown and other media contaminated that are not depicted in this graphic.

26 For more information regarding the appropriate use of MNA, see www.epa.gov/swerust1/pubs/tums.htm and EPA Directive Number 9200.4-17P, *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, available online at: www.epa.gov/oust/directiv/d9200417.htm.

Figure 8. Tree Analysis of Open Release Age[27]



New York Finding

DEC's database does not include the type of financing used to clean up a LUST release.

Potential Opportunity	Releases
Track financing at all UST facilities and consider having UST insurers notify DEC if a facility's policy is discontinued.	Variable number of releases

New York Finding

46 percent of state-funded cleanups:

- have a median age of 19.4 years;
- impact groundwater or other media types; and
- involve MTBE contamination.

Potential Opportunity	Releases
• Reevaluate the current remedial plan at old state-funded cleanups to identify releases where a more cost-effective plan could be implemented. • Increase efforts to enforce RP-lead cleanups or to initiate state-lead cleanups and cost recovery earlier.	127

27 There are 11 open releases for which age is unknown that are not included in the age tree.

PRESENCE OF MTBE CONTAMINATION

New York Finding
20 percent of releases have MTBE contamination.

Potential Opportunity	Releases
Reevaluate the current remedial plan and utilize optimal remedial technologies for the removal of MTBE.	518

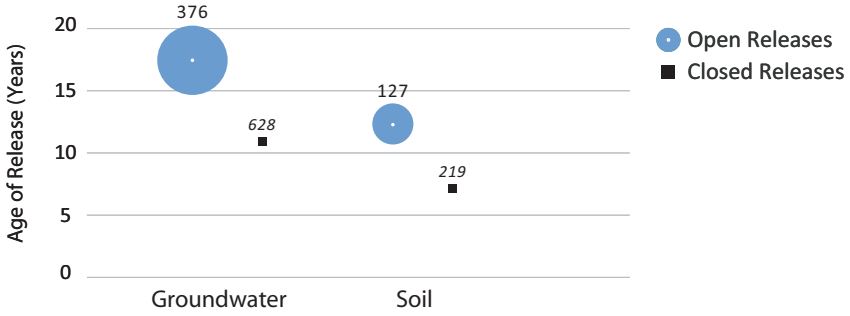
Releases with MTBE present are significantly older than releases with no MTBE present (Figure 8, Nodes 2.1 and 2.3). Since New York banned MTBE use as of January 1, 2004, this subset of releases will continue to increase in age until all have completed remediation and are closed. As a result, open releases with MTBE contamination are significantly older than closed releases with MTBE of the same media type (Figure 9 below). In contrast to the age comparison of all open and closed releases, which includes a large number of administrative closures (Figure 1, page 11), this comparison more accurately depicts the time to closure for releases that required remedial activities. Because MTBE does not readily degrade in groundwater, releases involving MTBE require more aggressive management and remediation than releases where MTBE is not present.[28] Between 2001 and 2003, DEC staff used an EPA grant to address the MTBE contamination from LUSTs on Long Island.[29] DEC has also used grant money to identify spills containing MTBE and train remedial project managers in effective source control and remediation. DEC has presented its MTBE findings at national forums. DEC has optimized many remedial systems to improve their efficiency and continues to oversee those efforts. Requiring RPs to actively remediate releases with MTBE and employ innovative technologies could allow for faster cleanups.

New York Finding
5 percent of releases: • have MTBE contamination; and • contaminate soil only.

Potential Opportunity	Releases
When MTBE is identified in a site assessment, move quickly to address MTBE contamination to prevent migration into groundwater.	127

According to DEC, the 127 releases with MTBE contamination identified in the Spill Incidents database as impacting soil but not groundwater, might in fact impact groundwater (Figure 9). Early responses to releases contaminated with MTBE can minimize its spread to groundwater. Efforts to track and address MTBE contamination in soil prior to migration into groundwater could help to reduce future complex groundwater cleanups. Because of limited resources, states might not be able to quickly address MTBE at all releases.

Figure 9. Age of Releases with MTBE Contamination and Groundwater or Soil Impacts, by Media Contaminated and Status of Cleanup[30]



28 For more information, see www.clu-in.org/contaminantfocus/default.focus/sec/Methyl_Tertiary_Butyl_Ether_(MTBE)/cat/Treatment_Technologies.

29 For more information, see DEC's *Spill Response & Remediation FAQ*, available online at www.dec.ny.gov/chemical/8692.html.

30 A total of 15 open releases with MTBE contamination and unknown or other media impacts are not depicted in this graphic.

NUMBER OF RELEASES PER AFFILIATED PARTY

EPA analyzed the number of releases per affiliated party to identify entities that are the largest potential contributors to the state's cleanup backlog.[31] A total of 12 entities are each affiliated with 10 or more releases and account for 11 percent of the New York backlog (264 releases) (Table 2 to the right).[32] Of these, 11 gasoline retail, distribution, and refining businesses are affiliated with 252 releases (10 percent of the backlog) and one government entity is affiliated with 12 releases (less than one percent of the backlog). Focused efforts engaging these 12 parties in collaboration might expedite closure of many of these releases. DEC staff have implemented "global" orders to enforce prevention efforts and cleanup actions with RPs affiliated with many releases, including the New York Department of Transportation and large oil companies.

Table 2. Parties Affiliated with 10 or More Open Releases

Type of Party	Number of Releases	Number of Entities
Gasoline Retail/Distribution/Refining	252	11
Government – State	12	1
Total	**264**	**12**

New York Finding

11 percent of releases are affiliated with 12 parties each with 10 or more releases.

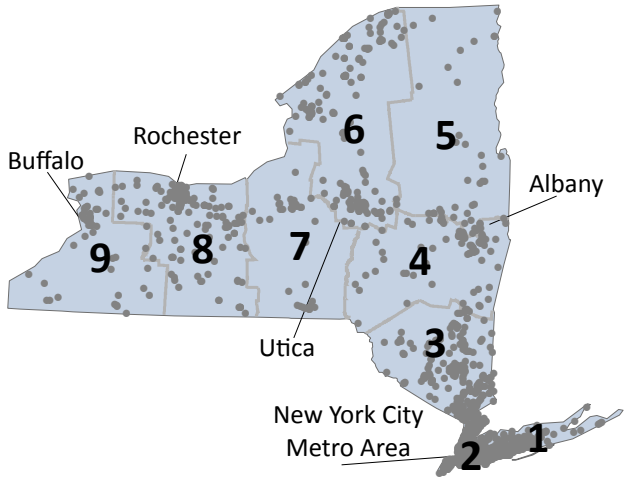
Potential Opportunity	Releases
Explore possibilities for multi-site agreements (MSAs) or enforcement actions with parties affiliated with multiple open releases.	264

GEOGRAPHIC CLUSTERS

EPA performed a geospatial analysis to look for alternative ways to address the backlog. While releases in geographic clusters might not have the same RP, they tend to be located in densely populated areas and might present opportunities to consolidate resources and coordinate efforts. Geographic proximity can call attention to releases in areas of interest such as redevelopment, environmental justice, and ecological sensitivity.

EPA's analysis identified 598 releases (24 percent of releases) located within a one-mile radius of five or more releases (Figure 10 to the right). Of these releases, 187 (8 percent of releases) are located within a one-mile radius of 10 or more releases. Approaching the assessment and cleanup needs of an area impacted by LUSTs can be more effective than focusing on individual sites in isolation from the adjacent or surrounding area. Considering geographically-clustered releases might pave the way for new community-based revitalization efforts, utilize economies of scale to yield benefits such as reduced equipment costs, and present opportunities to develop multi-site cleanup strategies, especially at locations with commingled contamination.

Figure 10. Map of All Open Releases, by DEC Region



New York Finding

24 percent of releases are clustered within a one-mile radius of five or more releases.

Potential Opportunity	Releases
Target releases within close proximity for resource consolidation opportunities.	Targeted number of releases[33]

31 According to DEC, the "spiller" data field is for the name of spiller identified by the person reporting the release and therefore is not necessarily the responsible party of the release. There is no other data field available to identify the RP or the owner.

32 No federal government entities were identified as being associated with 10 or more releases.

33 Opportunities marked as "targeted number of releases" relate to geographic opportunities that will address a limited number of releases within select designated geographic areas.

State and local governments can also utilize geographic clusters for area-wide planning efforts. In fact, New York has created Brownfields Opportunity Areas (BOAs) to enhance revitalization for areas and communities affected by the presence of brownfields. EPA encourages states to look for opportunities for resource consolidation and area-wide planning like New York's BOAs but also recognizes that this approach is best geared to address targeted groups of releases as opposed to a state-wide opportunity for every cluster of releases. EPA intends to conduct further geospatial analyses on clusters of open releases in relation to RPs, highway corridors, local geologic and hydrogeologic settings, groundwater resources, and/or communities with environmental justice concerns. These analyses might reveal additional opportunities for backlog reduction.

DATA MANAGEMENT

New York Finding
Several key data fields are not included, consistently maintained, or routinely tracked in DEC's Spill Incidents database.

Improve database to enhance program management and backlog reduction efforts.	Variable number of releases

Multiple database limitations prevent a full assessment of the backlog and associated strategies for backlog reduction. DEC's Spill Incidents database does not track a number of important pieces of release-related information, including the method of release cleanup and the stage of cleanup. In addition, there are no database fields dedicated to tracking the RP or the type or provider of financial responsibility for its UST facilities. DEC collects initial data through the spill hotline and the data might not be complete, accurate, or up to date. As a result, the number of releases with groundwater impacts is understated in the database. DEC has recently added a data field tracking the stage of cleanup for each release to the Spill Incidents database, but most releases are marked as "Response and Containment." The "Response and Containment" entry is the default value in this field and therefore cannot be considered up to date. DEC tracks information on remediation activities in a remarks field in the Spill Incidents database, which cannot be easily queried for important information. Additional improvements to database management could allow for easier overall program management in New York and could provide improved tools for developing strategies to reduce the cleanup backlog.

CONCLUSION

In this state chapter, EPA presented the analysis of LUST data submitted by DEC and highlighted information on New York's LUST program. Based on the analytic results, EPA identified potential opportunities that could be used to address specific backlog issues in New York. Over the course of the entire study, EPA also analyzed data from 13 other states. Findings and opportunities that apply to all 14 states are discussed in the national chapter of the report. Each opportunity represents one potential approach among many to address the backlog. Discussion of the opportunities as a whole is intended as a starting point for further conversations among EPA, New York, and the other states on strategies to reduce the backlog. EPA will work with the states to develop detailed strategies for reducing the backlog. Development of the strategies might include targeted data collection, reviewing particular case files, analyzing problem areas, and sharing best practices. The strategies could involve actions from EPA such as using additional program metrics, targeting resources for specific cleanup actions, clarifying and developing guidance, and revising policies. EPA, in partnership with the states, is committed to reducing the backlog of confirmed UST releases and to protecting the nation's groundwater, land, and communities affected by these releases.

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www.osc.state.ny.us/oilspill/index.htm

CHAPTER NOTES

NEW YORK DATA BY ATTRIBUTE

The following table provides details on the data elements of interest in this analysis. Data were provided by DEC staff in 2008 and 2009 for use in this analysis. Several data elements of interest could not be addressed with the information available. All available data elements were analyzed and only those data elements that revealed informative patterns of interest are included in the report.

Data Element	New York Data	Use in Analysis
Administrative Cost	Estimates were provided by DEC staff.	Included in the "Program Summary" section and in the national chapter.
Affiliated Party	Data were obtained from the "SPILLCOMP" field in the "ALLSITES.DBF" file. The few open releases with multiple spillers listed were assigned the spiller with the most other releases. DEC indicated these data might not be accurate and do not necessarily indicate the party responsible for the release.	Used to calculate the number of releases associated with each unique affiliated party.
Age	Age was calculated for closed releases by subtracting the confirmed release date from the closure date and dividing by 365. Age was calculated for open releases by subtracting the confirmed release date from the data date and dividing by 365. Any values less than -.1 were left blank. Values between -.1 and 0 were counted as 0. All dates were rounded to one decimal point. Ages of releases with insufficient or invalid data were left blank.	Variable in all analyses.
Cleanup Financing	Data were obtained from the "State_funded_lust.xls" file, a list of spill numbers where the state might have conducted at least a portion of the investigation or cleanup.	Examined in the "Cleanup Financing" section.
Cleanup Standards	No site-specific data available.	State-wide standards examined in the national chapter.
Closure Date	Data were obtained from "CLOSEDATE" in the "ALLSPILL.DBF" file. This is the date the spill case was closed by the DEC case manager because either: a) the records and data submitted indicate that the necessary cleanup and removal actions have been completed and no further remedial activities are necessary; or b) the case was closed for administrative reasons (e.g., multiple reports of a single spill consolidated into a single spill number).	Included in the calculation of release age.
Confirmed Release Date	Data were obtained from the "RCVDDA" field in the "ALLSPILL.DBF" file. This is the date the spill was reported to the department.	Included in the calculation of release age.
Data Date	February 24, 2009, is used for all records. This is the date the data were downloaded.	Included in the calculation of release age.
Federally-Regulated LUST Releases	A list of site identification numbers for relevant releases was provided by DEC staff in "LUSTList.xls."	Identified the appropriate universe of releases for analysis.
Free Product	No data available.	Not Applicable (NA)
Institutional and Engineering Controls	No data available.	NA
Latitude and Longitude	Data were obtained from the "Latitude" and "Longitude" fields in the "LUSTList.xls" file. Where possible, coordinates for releases without existing latitude and longitude values were obtained by EPA staff by geocoding address and street locations.	Used in geospatial analysis calculating the number of open releases within a one-mile radius of other open releases.

Data Element	New York Data	Use in Analysis
Media	Data were obtained from the "MEDDW," "MEDGW," "MEDINDAIR," "MEDSEWER," "MEDSOIL," and "MEDSW" fields in the "ALLMATS.DBF" file. Releases with groundwater contamination marked (in addition to any other media) were counted as "groundwater." Releases with only soil contamination marked were counted as "soil." Releases with any other combination of media were counted as "other" (including drinking water, surface water, indoor air, and sewer). Releases counted as "unknown" might include those for which there are no data available in the database, but for which information is available in other files and releases at which the media contaminated are truly unknown.	Examined in the "Media Contaminated" section.
Monitored Natural Attenuation	No data available.	NA
MTBE	Data were obtained from "MaterialNa" field in the "allMATS.DBF" file.	Examined in "Presence of MTBE Contamination" section.
Number of Releases per Affiliated Party	Calculated as the total number of open releases affiliated with a unique spiller name.	Examined in the "Number of Releases per RP" section.
DEC Region	Data were obtained from the "DECREG" field in the "ALLSPILL.DBF" file.	Examined in "Regional Differences" section.
Orphan	DEC does not consider any release to be orphan and has a proactive enforcement arm looking for RPs.	NA
Proximity	Geospatial analysis performed by EPA revealed the number of other open releases located within a one-mile radius of each open release.	Examined in the "Geographic Clusters" section.
Public Spending	No data available.	NA
Release Priority	Data obtained from the "CLASS" field in the "ALLSPILL.DBF" file.	No informative patterns were identified.
RP Recalcitrance	No data available.	NA
Staff Workload	Estimate provided by DEC staff.	Examined in the "Program Summary" section and in the national chapter.
Stage of Cleanup	No data available.	NA
Status	Data were obtained from the "Remedial Stage" field in the "LUSTList.xls" file. All records with a "Closed" entry in this field were counted as "Closed" and the remaining releases were counted as "Open."	Identified the appropriate universe of releases for tree analysis.
Voluntary Cleanup Program	No data available.	NA

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