REPORT OF THE
JOINT SUBCOMMITTEE EXAMINING

THE APPROPRIATE FINANCIAL ROLE AND RESPONSIBILITY OF THE COMMONWEALTH, IF ANY, TO ASSIST LOCALITIES IN REMEDIATING ABANDONED SOLID OR HAZARDOUS WASTE SITES

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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EXECUTIVE SUMMARY

The federal Superfund program provides a mechanism for remediating property where improper waste disposal poses a major threat to public health. However, there are many sites throughout the Commonwealth which, while dangerously contaminated, do not qualify for designation for Superfund cleanup. Virginia does not currently have a program for identifying, prioritizing, and remediating such sites where there is no identified and solvent responsible party.

While it may be the largest and most well known example, the Kim-Stan landfill is but one of several hundred sites in Virginia where waste has been improperly managed and poses a substantial risk to health, and where there is no one responsible who can be required to remediate the site. The Department of Environmental Quality (DEQ) has identified 2,015 possible abandoned waste sites in the Commonwealth.

The January 1996 risk assessment prepared by Ogden Environmental and Energy Services Company, Inc., concluded that, based on an analysis of a 250-site sample, Virginia has between 371 and 411 abandoned sites that pose substantial health risks. The cost of their remediation is estimated to fall between $277 and $670 million.

A DEQ analysis of the Ogden risk assessment based on business/product sectors indicates that the number of at risk abandoned waste sites may be between 230 and 393. The cost of remediating these sites was estimated at between $201 million and $286 million.

A DEQ survey conducted in November of 1993 found that 36 states have an identified funding source for remediating waste disposal sites. The funding source most commonly identified was cost recovery from responsible parties (28 states, including Virginia), followed by landfill tipping fees (15 states), bonds or grants (10 states), general funds (9 states), waste generation fees and transport fees (8 states each), and civil or administrative penalties (7 states).

The joint subcommittee recommends that the Commonwealth establish a comprehensive program to address the problem of abandoned waste sites. Abandoned waste sites should be defined as properties where substances within the jurisdiction of the Waste Management Board have been improperly managed and have not been closed or remediated as required by applicable law, and where (i) title to the site has escheated to the Commonwealth, (ii) the owner has ceased to exist or cannot be determined, or (iii) the owner is known, but the site is not occupied or regularly operated and the owner cannot pay for the site's cleanup. Sites owned by the state (except escheated sites) and local governments, on the National Priority List, or required to be remediated under RCRA, should be excluded from designation as abandoned waste sites. The purpose of the definition is to encompass "orphaned" contaminated sites where no party can be held accountable for the cleanup.

Elements of an abandoned waste site remediation program should include (i) vesting control of both ownership and cleanup of sites in a single agency; (ii) requiring that the designation of property as an abandoned waste site follow a case decision process under the Administrative Process Act; (iii) authorizing the agency to partly or fully close or abate damage caused by abandoned waste sites; (iv) allowing the agency to recoup cleanup costs from responsible parties if they are known and to have a lien on the site for such costs; (v) addressing the appointment of receivers for abandoned waste sites; (vi) preventing the escheat to the Commonwealth of abandoned waste sites; and (vii) immunizing the agency from liability for actions taken with respect to such sites.

To the extent feasible, an abandoned waste site program should rely on incentives to encourage the voluntary remediation of such sites by the private sector. Possible incentives include income tax credits, grants, property tax exemptions, and limits on liability. When necessary, local governments should be provided with incentives to contribute to the cleanup of sites within their jurisdictions.

In order to ensure a rational approach to the problem of abandoned waste sites, a procedure is needed to identify the sites and rank them in order of the threat posed to human health and the environment. Once cleanups of abandoned waste sites are prioritized, plans for their remediation should be prepared that reflect the optimum course of action including voluntary remediation, acquiring title to the site, contracting for remediation, receivership, or seeking injunctive relief. The development of remediation plans should take into consideration funding limitations.

To address these elements of a state program for remediating abandoned waste sites, the joint subcommittee endorses legislation introduced in the 1997 Session as House Bill 2026. The bill vests responsibility for ownership and administration of abandoned waste sites in a new body politic and corporation entitled the Abandoned Waste Site Remediation Foundation. Staffing and administrative support will be provided by DEQ.

Identifying an adequate source of funding for the program has proven difficult. Assuming the minimum estimated cost of remediating abandoned waste sites is $200 million, a twenty-year cleanup cycle will require $10 million annually. The joint subcommittee examined funding mechanisms used by other states. Funding options discussed include increases in existing product fees, new pre-disposal fees on certain products, permit fees on waste disposal facilities, and utilizing a portion of the civil penalties and civil charges currently paid into the Environmental Emergency Response Fund. The joint subcommittee recommends that the program be funded in part by voluntary contributions solicited by a non-profit corporation. In addition, initial funding should be provided by diverting a portion of the civil penalties and charges now deposited in the Environmental Emergency Response Fund. Though these identified sources may not be sufficient to allow the program to undertake remedial actions on a large scale, they will permit the agency to begin identifying and prioritizing abandoned waste sites.

Report of the Joint Subcommittee Examining the Appropriate Financial Role and Responsibility of the Commonwealth, if any, to Assist Localities in Remediating Abandoned Solid or Hazardous Waste Sites

To: The Honorable George Allen, Governor of Virginia
and
The General Assembly of Virginia

Richmond, Virginia
April, 1997

I. INTRODUCTION

The 1994 Session of the General Assembly, in Item 495 C, (Appendix A) of the 1994-1996 general Appropriation Act, created a joint subcommittee to examine the appropriate financial role and responsibility of the Commonwealth, if any, to assist localities in remediating abandoned solid or hazardous waste sites. The joint subcommittee consisted of five members: Delegates R. Creigh Deeds, Kenneth R. Melvin, and Kenneth R. Plum; and Senators Malfourd W. Trumbo and Madison E. Marye. The Secretary of Natural Resources was directed to serve as a non-voting ex-officio member of the joint subcommittee. Staff support was provided jointly by the Senate Finance and House Appropriations Committees, the Division of Legislative Services, and the Department of Environmental Quality (DEQ).

In the 1995 Session, the General Assembly amended Item 495 C (Appendix B) to direct the joint subcommittee to examine ownership, access, and residual value issues associated with abandoned waste sites and the establishment of financial responsibility for their cleanup. The joint subcommittee was also directed to recommend appropriate funding mechanisms and a timetable for the cleanup of those sites deemed to pose the most immediate threat to public health and safety. The Office of the Attorney General was also directed to provide support for the study.

House Joint Resolution No. 193, adopted by the 1996 Session of the General Assembly, continued the joint subcommittee for a third year (Appendix C). The joint subcommittee was directed to submit its findings and recommendations to the 1997 Session of the General Assembly.

II. BACKGROUND

A. THE KIM-STAN LANDFILL EXPERIENCE.

Much of the public's interest in the problems associated with abandoned waste sites originated with the Kim-Stan landfill. Located near Selma in Alleghany County, the landfill is on a 40.9 acre site where the flank of the Rich Patch Mountains meets the alluvial floodplain of the Jackson River. Its location at the base of a mountain makes the Kim-Stan site a less-than-ideal location for a garbage dump. Spring water and runoff from the landfill seep through the waste, fostering the leaching of waste components into the discharged water. A permit was issued for a sanitary landfill in 1972 under regulations that required neither the installation of a liner nor a system for collecting leachate.

From November 1972 through the fall of 1988, the landfill accepted an estimated 140,000 tons of municipal solid waste generated primarily within Alleghany County. In 1988, the stock of Kim-Stan, Inc., was sold to Shelcy Mullins and Jerry Wharton, both of Wise, Virginia. They sold 50 percent of their stock to Vertay Enterprises, Inc., a Michigan company owned by William Stover and Howard Taylor. In the 18 months between November 1988 and May 1990, an estimated 725,000 tons of out-of-state municipal solid waste was deposited at the site.[1]

Leachate from the Kim-Stan landfill was found to be responsible for a fish kill in June 1989. Following a series of court actions, the landfill was ordered closed on May 10, 1990. Cessation of the landfill's operations did not solve its environmental problems. At the time of closure, an estimated 36,000 gallons per day of leachate were being generated in the landfill. The cost of implementing a closure plan including a clay cover, a layer of topsoil seeded with grass, a methane venting system, and a system for collecting the runoff for treatment at the Clifton Forge sewage treatment plant, was estimated at $9 million. Additional annual post-closure operating and maintenance expenditures of $135,000 will also be required.[2]

Funds to recoup these cleanup costs were not recovered from Kim-Stan's owners. In September 1990, Kim-Stan, Inc., was forced into bankruptcy. The Commonwealth recovered $81,176.16 through the bankruptcy proceeding. Another $60,473.25 was recovered from financial assurance funds posted by the landfill's operators. Virginia has spent over $450,000 to stabilize the site and prepare a closure plan.

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[1] *Initial Closure Action Plan Report for Kim-Stan Sanitary Landfill.* CH2M Hill. January 1993, p. I-1.

[2] Id., pp. III-2. III-3.

DEQ reported in August of 1994 that the Kim-Stan site continues to generate leachate. Samples of water discharged from the landfill contain levels of arsenic, barium and lead that exceed maximum concentration levels established by the U.S. Environmental Protection Agency (EPA). The State Health Department has determined that these contamination levels would pose a danger to human health only if area residents used groundwater as the source of their drinking water.

B. ABANDONED WASTE SITES IN THE COMMONWEALTH.

1. 1993 Survey of Abandoned Waste Sites.

Though the Kim-Stan landfill may have received the greatest amount of publicity, it is not the only site in the Commonwealth where waste has been improperly disposed of and where a financially responsible person cannot be identified. Pursuant to Item 399.2 C of the 1993 Appropriation Act (Appendix D), DEQ was directed to evaluate the number of abandoned waste sites within the Commonwealth for which significant corrective action would be required. The evaluation was to include (i) a survey of the number of known abandoned solid and hazardous waste sites, (ii) an estimate of the cost of remediating those sites posing the highest degree of threat to health and the environment, and (iii) a summary of the mechanisms used in other states to provide funding for the remediation of such sites.

The abandoned waste site survey was submitted to Governor Wilder and the chairmen of the Senate Finance and House Appropriations Committees on November 8, 1993. The DEQ list of over 2,000 possible abandoned waste sites includes sites where the disposal or improper management of solid or hazardous wastes are known or strongly suspected to have occurred and which are not undergoing remediation. DEQ acknowledged that it did not have sufficient information to determine whether the sites on the list were "abandoned" by their owner. The agency also stated that it was unable to determine the extent of contamination and risks of exposure from the sites. The limited information concerning the level of contamination at each of the sites precluded DEQ from prioritizing the sites and calculating the cost of their remediation. DEQ estimated that at least 10 percent of the reported sites constitute significant problems that should be cleaned up. DEQ estimated that 200 to 250 sites could require attention directed through an organized state program.

DEQ's report recommended that $300,000 be provided to fund a study to examine the sites. Under the proposed study, each site on the list would be examined in greater detail to determine if it is abandoned and to classify the sites into three groups according to the degree of the health threat posed. The proposed study would also include a work plan describing strategies to be used by the Commonwealth to remediate sites within each risk classification. Finally, DEQ

recommended that the General Assembly review funding mechanisms used in other states to determine a suitable funding mechanism for Virginia.

In February of 1994, DEQ released a list of over 2,000 abandoned waste sites in Virginia. The list of abandoned sites represents a list of reported incidents, spills, or intentional dumpings and does not represent actual contamination or illegal activity. Of the 2,168 original entries, 153 were removed due to duplications, informational errors, the inclusion of sites on the Superfund National Priority List, and similar problems. In addition, the list includes numerous sites which, upon further investigation, were determined not to be "abandoned."

2. The Ogden Risk Assessment Study.

In response to the recommendation in DEQ's November 1993 report, the 1994 Session of the General Assembly authorized the expenditure of $125,000 for the completion of a comprehensive risk assessment related to abandoned solid and hazardous waste sites in the Commonwealth which require significant corrective action. Pursuant to Item 495 B (Appendix E) of the 1994 Appropriation Act, DEQ was directed to estimate the costs to contain or remediate identified risks and to prioritize remedial actions that may be required based on the relative threat of the risk to public health or safety. DEQ was instructed to provide an interim report prior to December 1, 1994, based on responsible scientific sampling techniques involving a randomly selected number of sites. A final report was to be completed by October 1, 1995.

Following the preparation and issuance of a request for proposals for the comprehensive risk assessment, DEQ awarded a contract to Ogden Environmental and Energy Services Company, Inc., (Ogden) in October of 1994. It became apparent that the $125,000 appropriated by the General Assembly for the risk assessment, which sum was nearly 40 percent of the amount requested by DEQ, was insufficient to conduct an assessment of each of DEQ's 2,015 listed sites. Consequently, the study required assessments to be conducted for a limited number of sites, the findings of which could be extrapolated to the universe of 2,015 possible sites.

Ogden submitted an interim report on November 23, 1994, identifying a sample set of 250 sites to be assessed in the study. The interim report set out a work plan for the remainder of the study. The sample selection methodology, developed by DEQ, stratified the universe of 2,015 abandoned waste sites into smaller, homogeneous subsets based on source type (container, dump, lagoon, landfill, process, spill, or miscellaneous) and ten groundwater regions of Virginia. The sample set was then selected from each type/area subset in proportion to that subset's relative number of sites. Though the selected sites were chosen randomly, where appropriate preference was given to sites for which useful data was already available. Appendix F illustrates the stratification and proportionate selection

process adopted. At DEQ's request, the Kim-Stan landfill was added to the sample of sites to be subjected to the risk assessment.

Following selection of the 250 sample sites, data on each site was collected and reviewed. Completion of data gathering required Ogden to visit 115 sites, and take samples from 108 of these. Evaluation of several sites was barred by the lack of sufficient information to locate them.

The sites were then put through an initial qualitative ranking based upon relative risk. Factors considered in this ranking included (i) the presence and proximity of potable underground wells, (ii) the presence, proximity, and potential uses of any surface water, (iii) the current and potential uses of contaminated land, and (iv) the apparent extent and nature of any contamination, such as leaching, stains, and known contamination levels. A comprehensive risk assessment was to be required for 50 sites believed to pose the greatest risk. The risk assessment followed EPA's Risk Assessment Guide -- Human Health Evaluation Manual. The assessment is a four-step process of hazard identification, toxicity assessment, exposure assessment, and risk characterization. Appendix G illustrates how the 250 sites are evaluated and ranked. The 50 highest ranking sites were to be evaluated under two exposure scenarios, and the results compared to two threshold risk levels (or the maximum exposure level).

The final step of Ogden's risk assessment was the preparation of an estimate of remediation costs for all sites determined by the assessment to pose a human health threat. Separate cost estimates were prepared for the remediation needed to achieve a less than a one-in-10,000 extra cancer risk and to achieve a less than one-in-1,000,000 extra cancer risk. "Extra cancer risk" is the risk of cancer that exceeds that experienced by the general public. A one-in-10,000 extra cancer risk is the base or minimum standard under existing federal regulatory protocols, and is generally acceptable for industrial use property. The more stringent one-in-1,000,000 extra cancer risk is the risk factor that is generally acceptable for residential use property. The estimated total remediation cost for those sites with known risks was then to be extrapolated across the list of 2,015 possible abandoned solid waste sites.

Ogden presented its final risk assessment findings to DEQ in January of 1996. Of the 250 sites in the sample, DEQ subsequently determined that 117 were not abandoned. In determining whether a site was abandoned, DEQ applied the definition of "abandoned waste site" incorporated in the Abandoned Waste Site Authority Act (Chapter 598 of the 1995 Acts of Assembly), as follows:

> "Abandoned waste site" means a waste site in existence on January 1, 1995, for which there has been no adequate remediation or closure and for which (i) adequate financial assurance as required by [Virginia Code] § 10.1-1410 or 10.1-1428 is not provided and (ii) the owner,

operator, or other person financially responsible under provisions of state or federal law for the cost of cleanup or remediation of the waste site is unable to pay the cost of the cleanup or remediation. Waste Sites included on the National Priority List pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. § 9601 et seq.) and waste sites owned by the Commonwealth or any county, city or town shall not constitute abandoned waste sites. Abandoned waste site does not mean coal refuse piles regulated pursuant to Title 45.1 or abandoned mine lands existing at the time of enactment of the federal Surface Mining Control and Reclamation Act of 1977.

The use of the foregoing definition of an abandoned waste site enabled DEQ to refocus the analysis so that the results more closely reflected the risks and remedial costs of abandoned waste sites. Owners and operators of sites in the sample were given the opportunity to demonstrate that a site was not abandoned. DEQ will continue to refine the list of 2,015 sites and strike sites found to be inappropriately listed.

The work plan for the Ogden study called for quantitative risk assessments to be conducted for the 50 sites with the highest-ranking risks per the initial ranking. However, only 38 of the top 50 sites had sufficient data for conducting a quantitative risk assessment. Five sites just below the top 50 had sufficient data for risk assessment and were added to the list, bringing the number of sites subjected to quantitative risk assessment to 43. In addition, a risk assessment was conducted for the Kim-Stan landfill.

Ogden prepared remedial cost estimates for sites for which the cumulative cancer risk exceeds one chance in 1,000,000. Of these sites, Ogden identified a subset of sites with an extra cancer risk that exceeds one in 10,000. Remedial cost estimates were also prepared for sites with a hazard index exceeding one. Hazard quotients, which estimate non-carcinogenic risks, were summoned for all compounds at the site to obtain a hazard index for each site.

Of the 43 sites subjected to quantitative risk assessment, quantitative estimates were made for potential cancer and non-cancer risks, or both, for 41 sites. For two sites where the only compound of potential concern was lead, a benchmark level of 500 parts per million was adopted. Of the 41 sites, 38 showed extra cancer risks exceeding one-in-1,000,000 or a hazard index exceeding one. Sites with an extra cancer risk of less than one-in-1,000,000 or a hazard index of less than one were deemed not to require remedial action. The Kim-Stan landfill had a future site use scenario extra cancer risk of one-in-18,000 and a hazard quotient estimate of 147.

The Ogden report incorporates several assumptions that affect the remediation cost estimates. Important assumptions include:

- All sites were evaluated assuming residential use and exposures in the future. This approach almost certainly overestimates the consequent risk at many sites. Therefore, cost estimates are likely to exceed actual costs.

- The extrapolation of cost estimates from the sample to the universe of sites includes two cost estimates for the worst-case scenario that may be considered outliers. The costs in these two outliers account for 45 percent of the total costs used in the extrapolation. If these figures are unrepresentative, total financial liability would be lower.

- The cost estimates assume a relatively comprehensive response. A more complete site investigation would allow a more focused and cost-effective remedial action.

- Site-specific and innovative treatment technologies, which may reduce cost estimates, were not considered in the development of remedial action alternatives.

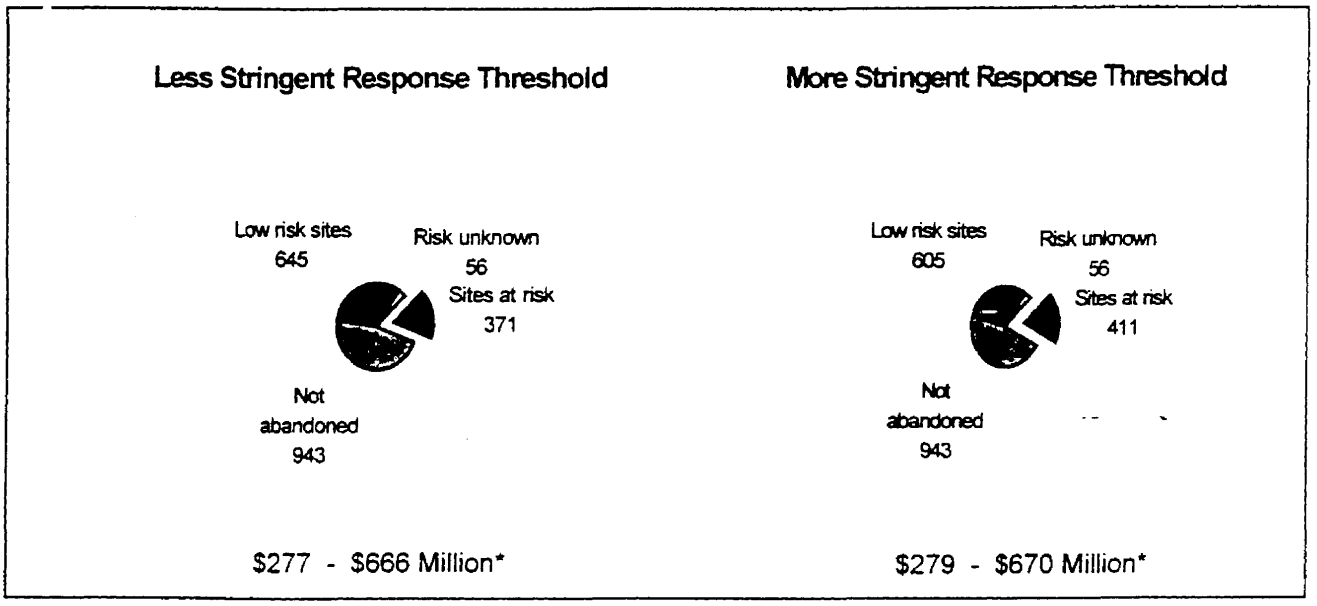
- The use of maximum detected concentrations of compounds in the risk assessments tends to overstate both health risks and the estimated costs of reducing the risks to acceptable levels.

- The exclusion of the seven sites that could not be assessed for risks could cause an underestimation of remedial costs.

- Twenty-four sites could not be fully assessed for risks due to the inability to gain access to the site. These sites were allocated to the "possibly at risk" or "probably at low risk" categories in the same proportion as other sites, and their reasonable costs of remediation are included in the calculations.

Subject to the assumptions stated in the report, Ogden projected that, at the more stringent regulatory response threshold, 411 sites could be expected to require remediation at a cost ranging from $279 million under a best case scenario to $670 million under a worst case scenario. Using the less stringent threshold, 371 sites would require remediation at a cost ranging from $277 million (best case) to $666 million (worst case).

SUMMARY OF PROJECTIONS



* Remedial cost estimates for sites at risk (best case/minimum to worst case/maximum).

Source: Environmental Risk Assessment Final Report, Ogden Environmental and Energy Services, January 8, 1996, p. 4.

A summary of the remediation costs for the sample set and the universe of 2,015 sites is included in Appendix H.

The estimated cost of remediating at risk sites varies widely. They range from a Sussex County tire fire site, which can remediated for less than $500,000, to an industrial site in Orange County where cleaning up arsenic in soils and metals in groundwater could cost $18 million.

Appendix I identifies the 250 sample sites, and classifies each as being non-abandoned (117 sites), at risk (38 sites), data limited or restricted (31 sites), or low risk (64 sites). Ogden's report allocates 24 of the 31 sites where data was limited or entry restricted to either the "at risk" or "low risk" categories, resulting in between 46 and 51 sites (depending on the regulatory threshold) being treated as potentially at risk, and between 75 and 84 sites being treated as having low risk with no associated remedial costs.

A summary listing of the 133 abandoned sites in the Ogden sample is attached at Appendix J. The list ranks the sites according to the degree of risk. The number under the "Risk" column suggests the relative overall cancer, toxicity hazard, and lead exposure risks on an order of magnitude scale. A magnitude of 1.0 indicates ten times more risk than the standard, 2.0 indicates 100 times greater risk, 3.0 indicates 1,000 times greater risk, et cetera. The listing also identifies the associated sector and the estimated cost of remediation for the site.

3. Business/Product Sector Analysis.

At the request of the joint subcommittee following the presentation of Ogden's final report, DEQ prepared an estimate of the remediation costs for abandoned at risk waste sites according to business or product groups or sectors. The universe of 2,015 sites was screened and categorized based on searches of each site record for key words associated with sectors of interest. Appendix K shows the sector breakdown for the sample of 250 sites and the results of extrapolating the same sector allocation to the universe of 2,015 sites.

By extrapolating the remediation costs of at risk sites in each business/product sector to the universe of possible sites, DEQ projected that there are 393 abandoned at risk sites, and that the cost of their remediation will be $286 million. The sector breakdown indicates that, of the 393 projected abandoned at risk sites, the sectors with the most number of sites are dumps (88.5 sites), landfills (59 sites), automotive (36 sites), construction (32.4 sites), and uncategorized (22.8 sites). The cost of remediating at risk sites in the various sectors does not correspond to the number of sites in each of the business/product sectors. The five sectors with the largest cleanup cost are wood products/preservation ($69.7 million), landfills ($51.2 million), dumps ($36.6 million), automotive ($24.6 million), and metal foundry/smelting ($20 million). This breakdown assumes a remediation cost of $250,000 for sites in sectors for which there is no cleanup cost data. It also projects that one-half of the "uncertain risk" sites require remediation.

The average cost of remediating sites within each sector varies widely. The cleanup of the single tannery identified as an abandoned at risk waste site is estimated at $4.5 million. It is followed by wood products/preservation sites ($3.21 million each), metal foundry/smelting ($2.33 million), textiles ($0.88 million), coal gas facilities ($0.83 million), and electronics ($0.75 million).

DEQ also conducted a business/product sector analysis which does not project that any of the "uncertain risk" sites require remediation. Under this alternative approach, the number of at-risk sites is estimated at 230, and the cost of their remediation is estimated at $201.19 million. A summary of this analysis is attached as Appendix L. By excluding consideration of sites for which risk could not be assessed due to limited access, limited access, or time constraints, DEQ noted that this approach tended to underestimate remedial costs by up to $83 million. The variance from the results of the Ogden study (which estimated that there are between 371 and 411 at risk sites that will cost between $277 million and $670 million to clean up) is attributable to the assumption implicit in the sector breakdown analysis that remediation will be required only for those sites in the universe for which sites in the sample in the same sector will require remediation. As a result, all of the sites in a sector in the universe for which no sample sites were found to be at risk are presumed to be low risk and have no remediation costs.

In summary, Ogden's final report and DEQ's sector analyses produce several estimates of the number of abandoned waste sites posing a threat to human health and the cost of their remediation. The estimates of the number of abandoned at risk sites in Virginia range from 230 to 441. The corresponding total remediation cost ranges from $201.19 million to $670 million.

C. PROGRAMS FOR REMEDIATING WASTE SITES.

While the federal Superfund program is directed at cleaning up the nation's most dangerous waste sites, it does not encompass all waste sites. The Superfund program, established by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), provides federal funding for remediating waste disposal sites which pose the greatest danger to human health and the environment. In the Superfund site identification process, potential waste disposal sites are recorded in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS). CERCLIS is a national database maintained by EPA to track Superfund sites.

There are approximately 600 Virginia sites on the CERCLIS list. Inclusion on the CERCLIS list does not translate into a Superfund cleanup; only those sites on the National Priority List (NPL) are eligible. There were 23 NPL sites in Virginia at the start of the joint subcommittee's work, of which six were federally owned. As these 23 sites are all being addressed under the Superfund program, none of the NPL sites, or sites proposed for NPL listing, are included in DEQ's survey of abandoned waste sites.

For a CERCLIS site to be considered for listing on the NPL, it must go through a two-phase process. In the preliminary assessment phase, existing information is evaluated to determine the need for a site investigation. Following a site assessment, the site is assigned a score under the hazard ranking system that assigns points based on such factors as the toxicity of pollutants and the site's proximity to drinking water supplies. If a site scores above a designated value, it is added to the NPL. If a site does not score high enough for NPL status, the threat posed by contaminants at the site may nonetheless be significant. The responsibility for remediating sites not on the NPL belongs to the states. In response, many states have enacted programs to address the cleanup of contaminated sites that do not qualify for NPL designation.

1. Funding Abandoned Waste Site Remediation in Other States.

Item 399.2 C of the 1993 Appropriation Act directed DEQ to summarize the mechanisms used in other states to provide funding for the remediation of abandoned waste sites. DEQ reported in November 1993 that 36 of the 48 states responding to its survey had a funding source for the remediation of waste disposal

sites. Twelve states acknowledged that they have no such funding source nor do they have any reliable method of cleaning up such sites.

The funding sources most frequently identified in the DEQ survey were:

Funding Source	Number of States
Cost recovery	28
Landfill tipping fee/tax	15
Bonds/grants	10
General fund	9
Generator fee/tax	8
Transport fee/tax	8
Civil or administrative penalties	7
Tax on specific products	5
Assessments	3

Several states employ a combination of these sources. Other methods cited include licensing fees, transferring money from other funds, and interest earned on other state funds.

A summary of the funding mechanisms in other states identified by DEQ is attached as Appendix M. The following programs were examined in detail by the joint subcommittee in the course of its work:

West Virginia (W.Va. Code § 22-16-1 et seq.): The Landfill Closure Assistance Program provides funding for the closure and reclamation of landfills where the permittee lacks the financial resources to properly close the site. Funding is provided by a $4 per ton solid waste disposal fee, which generates approximately $8 million annually. Twenty-one sites have been identified as being eligible for this program.

West Virginia's Pollution Prevention and Open Dump (PPOD) Program provides a mechanism to clean up illegally disposed waste at unpermitted landfills, open dumps, roadside dumps, and orphan waste sites. Funding is provided by a tipping fee of one-half cent per ton on landfilled solid waste. The program has an annual budget of approximately $1 million. Approximately 15,000 eligible sites have been identified. As of August of 1994, 1,908 sites had been remediated.

North Carolina (N.C. Code § 130A-310 et seq.): The Inactive Hazardous Site Fund Program was established to identify, assess and clean up unregulated hazardous and solid waste sites. The program is funded through appropriations from the general fund of $100,000 in 1987 and $500,000 in 1988, and from cost recovery actions and civil penalties averaging $340,000 per year. North Carolina has identified 1,005 eligible sites. North Carolina law also provides that any money

in its environmental emergency response fund in excess of $500,000 shall be deposited in the Inactive Hazardous Site Cleanup Fund. (N.C. Code § 130A-306)

Kentucky (K.R.S. 224.46-580): The Hazardous Waste Assessment Program requires generators of hazardous waste to pay assessments ranging from $0.001 to $0.012 per pound of hazardous waste generated. The funds are used to finance the remediation of abandoned and bankrupt waste sites. In 1995, the program collected $2.5 million.

Georgia (Ga. Code § 12-8-90 et seq.): The Hazardous Waste Trust Fund, which is used to investigate and clean up waste sites, is financed from (i) fees on hazardous waste generated in-state; (ii) fees on hazardous waste imported into Georgia; (iii) a $0.50 per ton fee on solid waste disposed of in Georgia landfills; and (iv) civil penalties. In fiscal year 1996, Georgia collected $12 million for the Fund, of which $3.9 million was from solid waste disposal fees.

Oregon (O.R.S 45.380-385): In 1991, Oregon approved an initial $7.3 million expenditure for Orphan Site Account (OSA) project work. Orphan Sites are defined as those contaminated with hazardous substances where the owner/operator is unknown, unwilling or unable to pay for cleanup. OSA funds were raised by the sale of pollution control bonds, with debt service provided by three fees: (i) a "possession of hazardous substance" fee, solid waste fees for remedial action or removal, and a solid waste surcharge.

An analysis of funding options as implemented in other states is discussed in greater detail on pages 31 through 35 of this report.

2. Legal Issues Relating to Virginia's Site Remediation Laws.

The 1995 amendments to Item 495 C of the 1994-1996 Appropriation Act directed the joint subcommittee to examine ownership, access, and residual value issues relating to the cleanup of abandoned waste sites. John R. Butcher, Assistant Attorney General, addressed these issues in a presentation to the joint subcommittee presented on May 25, 1995.

a. Ownership

The Waste Management Board may compel the owner or operator of a solid or hazardous waste treatment, storage or disposal facility to close the facility in conformance with applicable regulations as set out in § 10.1-1455. D. Section 55-182.2 provides the Board with recourse against any prior owner for the costs of cleanup of escheated property on which hazardous material, as defined in § 44-146.34, is found.

Where its owner cannot be found, property will in due course escheat to the Commonwealth. Situations leading to escheat include an individual owner who has disappeared or a corporation that has terminated and dissolved. Escheat occurs by operation of law. The statutory escheat procedures do not create the escheat, but merely put the fact of the escheat to record. Sands v. Lynham, 68 Va. (27 Gratt.) 291, 298 (1876).

The statutory escheat process (§§ 55-172; 55-184.1) provides that, following an inquest to determine whether land has escheated to the Commonwealth, it will be sold by the escheator. The process reflects a presumption that the property has some value. However, this presumption usually fails in the case of an abandoned landfill.

In the case of the Statesman Park landfill in Roanoke, the corporate owner knew that hazardous waste rendered the site valueless and walked away from it. The issue arose as to whether the property had escheated even though the corporate owner remained in good standing. The Commonwealth sued to reverse the Statesman Park escheat. The Roanoke County Circuit Court held that the owner's voluntary abandonment established cause for an escheat of the property, but reversed the escheat on other grounds. Escheat of Lots Described as Eastland Developers, Inc., No. CH93000329 (Cir. Ct. City of Roanoke, Letter Op. September 30, 1994).

In 1996, the General Assembly amended §§ 55-170.1 and 55-173 to remove evidence of abandonment as a cause for escheat. This amendment appears to address the court's decision in the Statesman Park case. However, it is not clear that it overrules the Virginia Supreme Court's holding in Sands that the escheat of property to the Commonwealth is automatic at the time of failure of title.

The common law remedy of receivership, imposed to cure ongoing violations of a statute, may allow the Commonwealth to exercise indirect control of waste sites where the owner is absent, nonexistent, or recalcitrant. In Commonwealth v. Rhinehart, the circuit court appointed a receiver to sell assets and use the proceeds to close a tire dump. (Cir. Ct. Frederick Co., Order of September 23, 1994). The owners had failed to comply with an injunction requiring cleanup of the site. Similarly, in Board of Health v. Herr, No. 8-C-88 (Cir. Ct. Culpeper Co.), the owner of a waterworks fled Virginia. He had been jailed for contempt for violating an injunction requiring him to meet purity requirements. The court appointed a receiver for the waterworks, who used income from the waterworks' customers to correct the deficiencies. The waterworks was then sold to a newly-formed landowners' association.

Receivership may not be successful in the case of an abandoned waste site that has no value. In such cases, the Commonwealth would be required to pay the receiver's expenses. In addition, the appointment of a receiver may allow liable

parties with significant assets to avoid liability in a bankruptcy proceeding. In Ohio v. Kovacs, 429 U.S. 274 (1985), the Supreme Court held that the imposition of a receivership converted the injunction requiring the owners to clean up the site, which was enforceable in bankruptcy, into a claim for money, which was dischargeable in bankruptcy. Ohio therefore lost its ability to make the owners pay for the site cleanup.

Bankruptcy poses several problems in administering waste sites. In a Chapter 7 liquidation proceeding, assets of the estate are generally administered and sold by the trustee, and the proceeds used to pay the claims of creditors. However, any property not administered is abandoned to the debtor at the close of the bankruptcy case. Contaminated property that is a liability will generally be abandoned by the trustee, and thus reverts to the owner. That is what happened with the legal title to the Kim-Stan landfill, which at the conclusion of the bankruptcy case of Kim-Stan, Inc., reverted to the terminated corporation.

If the bankruptcy estate has significant assets and if the property poses an immediate threat to the public, the Commonwealth may be able to compel the bankruptcy trustee to use the estate's assets to abate the hazard. See In re Smith-Douglass, Inc., 856 F.2d 12 (4th Cir. 1988). However, once the immediate hazard is abated, the expenditure of estate's assets for cleanup may cease.

During and after the bankruptcy proceeding, a corporation may be obligated to comply with applicable state and federal laws, including the obligation to comply with an agency's administrative order requiring the debtor to clean up releases of hazardous substances. In re Torwico Electronics, Inc., 8 F.3d 146 (3d Cir. 1993). However, debtors may be able to shed their liability to clean up wastes placed on the site before the filing of their bankruptcy proceeding. Claims for reimbursement of cleanup costs incurred by a state and civil penalties have been held to be claims dischargeable in bankruptcy. In re Chateaugay Corp., 944 F.2d 997 (2d Cir. 1991).

The Commonwealth, as owner of last resort of abandoned landfills, must anticipate taking title to property that violates waste laws and that may constitute a public nuisance. The Waste Management Board is authorized to take actions to contain or clean up sites where solid or hazardous waste, or other substances within the jurisdiction of the Board, have been improperly managed (§ 10.1-1402 (19)). The Board is also authorized to abate hazards and nuisances dangerous to public health, safety or the environment created by the improper disposal, treatment, storage, transportation, or management of substances within its jurisdiction (§ 10.1-1402 (21)). Actions by the Commonwealth under this authority, absent such unconstitutional acts such as taking property without compensation, should be protected under the doctrine of sovereign immunity.

The state enjoys some protection from liability under federal environmental laws. CERCLA (42 U.S.C. § 9601 et seq.) exempts from liability states that

involuntarily acquire ownership of property. Section 101 (35) of CERCLA immunizes a state or local government from liability for cleanup costs under the federal law if (i) property was acquired by escheat or other involuntary transfer or acquisition, or through exercise of eminent domain authority by purchase or condemnation, (ii) it exercises due care with respect to the hazardous substances on the site in light of all relevant facts and circumstances, and (iii) it demonstrates taking precautions against foreseeable acts or omissions of any third party and the consequences that could foreseeably result from those acts or omissions. However, the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §6901 et seq.) does not contain a similar broad, explicit exemption from liability for property acquired by escheat.

b. Access

In order to investigate and remediate a waste site, the Commonwealth must be able to gain access to the site. At common law, entering private property to correct a public nuisance does not constitute trespass. A public nuisance is one that poses an unreasonable interference with a right common to the general public. Because there is no bright line test for what is an unreasonable interference with public rights, the common law does not provide clear authority for entry.

Section 10.1-1456 authorizes the Director of DEQ or his designee, with the consent of the owner or custodian, to enter at any reasonable time onto any property to inspect and investigate property to determine whether applicable laws are being complied with. If the owner or custodian denies entry, the Director may obtain an inspection warrant from the local circuit court.

The statutory right of entry does not address two situations. First, the right of access is unclear if no owner or operator can be found. Second, § 10.1-1456 does not specifically authorize entry to perform a cleanup of the site.

c. Residual Value

Even after an escheat, an owner can reclaim property that has not been sold by an escheator as authorized by § 55-200. Consequently, a landowner whose contaminated property has escheated to the Commonwealth could retain or attempt to reclaim property after it has been remediated with public funds. The Commonwealth may be able to prevent such an inequitable result through an action for unjust enrichment or by the creation of a constructive trust.

Under the Superfund program (42 U.S.C. § 9607 (l)), the federal government has a lien on remediated property for all costs and damages incurred. However, the lien is not available to states. Prior to 1991, Virginia law provided a statutory lien on realty, effective upon recordation, in an amount "sufficient to cover the

reasonable cost of taking remedial action" when money was expended for cleanup. This statutory lien, codified at § 10.1-1406, was repealed by the General Assembly in 1991.

III. ACTIVITIES OF THE JOINT SUBCOMMITTEE

A. AUGUST 31,1994, MEETING.

At the initial meeting, the members of the joint subcommittee elected Delegate Deeds as chairman and Senator Trumbo as vice chairman. Harry E. Gregori, Jr., Director of DEQ's Policy and Research Division, presented the results of the agency's 1993 survey of abandoned solid or hazardous waste sites and other states' waste site remediation programs. DEQ spokesperson Deanna Sampson addressed the status of the federal Superfund Reform Act of 1994.

The efforts of the joint subcommittee to develop recommendations regarding the proper role of the state in assisting localities in remediating abandoned waste sites were acknowledged to be handicapped by a lack of information on the number of sites and the cost of cleaning them up. DEQ outlined its work plan for the abandoned waste site risk assessment required by Item 495 B of the 1994 Appropriation Act. (See Appendix E)

B. OCTOBER 4, 1994, PUBLIC HEARING.

The joint subcommittee conducted a public hearing at Dabney S. Lancaster Community College in Clifton Forge. The site was chosen for its proximity to the Kim-Stan landfill. The ten speakers provided a variety of perspectives on the issue of waste site cleanups.

The comments of Juan Ramirez, who urged the state to take responsibility for funding the cleanup of waste sites, was typical. James Smith criticized the state's apparent lack of effort in addressing the problem. Elisha Gordon complained that none of the three gubernatorial administrations in office since the problems at Kim-Stan were identified in 1988 have resolved the issue of waste site remediation. Gene Pendergrass suggested that the state agency approving a landfill permit which later requires remedial action be required to pay for the cleanup through appropriations.

Other speakers focused their comments on the Kim-Stan site. James Downey criticized the leachate drainage plan at the former landfill site, which sends leachate across State Route 696 and over the property of the adjacent historic churchyard. Pete Harding and Jessie Cottrell urged the state to take immediate steps to remediate Kim-Stan.

Kit Keyser, representing the City of Roanoke, cautioned the joi... subcommittee not to define abandoned waste sites in a manner that would interfere with the Roanoke River Flood Reduction Project.

Following the public hearing, the members toured the Kim-Stan landfill site. The visit included the outfall points for leachate drainage and the adjacent church and cemetery lying between the landfill and the Jackson River, which is periodically inundated with discharge from the landfill.

C. JANUARY 11, 1995, MEETING.

Harry Kelso, chief of DEQ's policy section, presented Ogden's interim report at the joint subcommittee's third meeting. The interim report, dated November 23, 1994, outlined the scope of the risk-based assessment. It was announced that the final report would be due October 1, 1995. Members of the joint subcommittee expressed their sense that something needed to be done to address the problem of abandoned waste sites, while acknowledging that they would not have all of the needed information until Ogden issues its final report. The members agreed that the study should be continued for a second year.

D. MAY 26, 1995, MEETING.

The joint subcommittee anticipated receiving Ogden's risk assessment report in time to permit the conclusion of its work by the end of 1995. However, unforeseen problems delayed the completion of the Ogden report, which was due October 1, 1995, until January 1996. As a result, the joint subcommittee was unable to complete its work on schedule. At its meeting in May of 1995, the joint subcommittee received a report from staff of the Joint Legislative Audit and Review Commission (JLARC) on the practices of state and local governments concerning the siting and monitoring of solid waste facilities. JLARC's study, conducted pursuant to House Joint Resolution 529 of 1993, focused on whether minority communities are adversely affected by policies regarding such facilities.

Since 1988, Virginia has granted operating permits for 34 solid waste facilities. JLARC found that, while minorities are disproportionately affected by some facility sitings, there is no reliable evidence indicating that the siting process is intentionally racially biased. However, when new landfills, are sited, most localities do not implement strategies to involve community residents in the planning, site selection, and development of operational guidelines for the facility.

The JLARC report noted that in 1993 imported waste assessment for 14 percent of the total amount of solid waste disposed of in Virginia. By 1995, the figure was expected to grow to 18 percent -- an increase of almost 30 percent.

In the course of the study, members expressed concern regarding the amount of municipal solid waste imported into Virginia. A May 1995 report by the Congressional Research Service of the Library of Congress found that 1.5 million tons of municipal solid waste were imported into the Commonwealth for disposal in 1993. According to the CRS, Virginia was the third largest importer of such waste in the nation, exceeded only by Pennsylvania and Ohio.[3]

JLARC concluded that Virginia's cleanup program is inadequately funded. The environmental emergency cleanup program is funded through civil penalties levied against persons violating environmental laws. In six years, this method of funding has generated less than $700,000. Inactive landfills were found to pose potentially serious environmental risks, as indicated by the fact that only four percent of inactive landfills have liners, twelve percent have leachate collection systems, and 19 percent have methane gas control systems.

The same meeting featured a report by DEQ updating members on the status of Ogden's risk assessment study and a presentation by the Office of the Attorney General on ownership, access and residual value issues associated with abandoned solid or hazardous waste sites. The meeting also included a discussion of the Abandoned Waste Site Authority legislation introduced in the 1995 session.

Students from Dinwiddie County High School made a presentation regarding the cleanup of the Kim-Stan site. The students were awarded first place in a "Conservathon Competition" sponsored by state soil and water conservation districts. The competing schools were required to develop plans for cleaning up the Kim-Stan landfill. The Dinwiddie County team's winning plan called for the removal of waste from the site by a private landfill operator. Under the plan, the private landfill operator would be offered a contract for the exclusive right to manage solid waste disposal in Alleghany County in exchange for renovating the nearby Peters Mountain landfill and moving the trash from Kim-Stan to the renovated Peters Mountain site. The cost of renovating the landfill and relocating the trash was estimated at $19.7 million. When Kim-Stan was emptied, it could be fitted with a waterproof liner, leachate collection system and methane gas collection system as required by RCRA Subtitle D regulations. Following completion of these improvements, Kim-Stan could be returned to use as a landfill. The time to accomplish this plan was estimated at five years. The judges applauded the plan's reliance on inducements to attract private companies to accomplish the remediation work and its inclusion of a "round-robin" system designed to extend the useful life of landfills.

At the close of the meeting, the members of the joint subcommittee toured the School Street landfill site in the City of Richmond. Maintained by the city, the

[3] "Interstate Shipment of Municipal Solid Waste: 1995 Update," Congressional Research Service, May 5, 1995, CRS-5.

landfill was closed in the mid-1970s. This former municipal solid waste landfill features one of the nation's first methane collection systems. Methane generated by decaying garbage caused an explosion at a nearby house several years ago, and has prompted the city to install a gas monitoring system at an adjacent school and to periodically inspect nearby houses. The city's need to maintain the methane collection system underscored the need to adequately fund post-closure monitoring and maintenance at former landfill sites. The city has made a beneficial use of the former landfill. In addition to locating a waste transfer station at the site, the city operates a golf driving range on a portion of the covered landfill.

E. APRIL 16, 1996, MEETING.

The joint subcommittee's first meeting of its third year featured a presentation by members of the Kim-Stan Advisory Council on an alternative remediation plan for the former landfill site. Ed Walters, a former member of the Bath County Board of Supervisors, advised that they are conducting a feasibility study for bio-remediation constructed wetlands to treat leachate from the landfill site. The $157,000 cost of the feasibility study will be paid by the U.S. Army Corps of Engineers, DEQ, Alleghany County, and the local soil and water conservation district. Funding for the cost of the subsequent action phase has not been secured. The constructed wetlands are designed by Highland Engineering, P.L.C., of Monterey, Virginia. Constructed wetlands work by using microbes to consume nutrients in the effluent. The sludge byproduct will be absorbed by plants maintained in a marsh-like setting.

The CH2M Hill remediation plan for the Kim-Stan landfill recommended collecting and piping the leachate to Clifton Forge for treatment. The constructed wetlands option may produce a more cost-effective alternative. The cost of constructing a bio-remediation wetlands adjacent to the Kim-Stan landfill was estimated at $168,000.

At the April 1996 meeting, DEQ presented Ogden's final environmental risk assessment report. The results of the Ogden risk assessment are discussed on pages 5 through 8 of this report. Mr. Butcher of the Attorney General's Office provided the joint subcommittee with a list of issues for consideration in preparing a waste site remediation program. These issues are discussed on pages 24 and 25 of this report.

The meeting also included the presentation of a proposed work plan for the study's final year. Issues to be addressed included defining abandoned waste sites; identifying entities to be responsible for supervising and funding a site's cleanup; incentives to induce voluntary site remediation; and the sources of funds if the Commonwealth must bear the cleanup costs.

F. AUGUST 26, 1996, WORK SESSION.

Following the April meeting, staff prepared a discussion draft of legislation incorporating many of the suggestions made by Mr. Butcher and identifying possible incentives for voluntary site remediation. The discussion draft was presented at a work session held at Dabney S. Lancaster Community College in Clifton Forge. Much of the discussion focused on the definition of an abandoned landfill or waste site. The members elected to narrow the scope of the definition of an abandoned waste site from what was proposed by Mr. Butcher. Specifically, members recommended that the remedial program encompass only sites where the owner or operator is unknown or no longer exists, and where the owner or operator is unable to pay for the cleanup. They elected not to include sites where a known, responsible owner is able but refuses to pay for the cleanup. They also agreed that sites owned by the Commonwealth should be excluded from the program unless they were acquired by escheat.

Members agreed that the Waste Management Board is the appropriate entity to designate property as an abandoned waste site. Following designation as such a site, the administration and ownership of such sites should be the responsibility of a separate entity. The joint subcommittee tentatively agreed that a new foundation, staffed by DEQ, would be the appropriate body to prioritize the abandoned waste sites, develop plans for their remediation, and administer their cleanup.

Following the work session, the members traveled to the Town of Monterey to inspect its municipal wastewater treatment plant. The secondary treatment facility uses an artificial wetlands for bioremediation of effluent. Following a background presentation by G.E. McWhorter, Jr., mayor of the town and head of Highland Engineering, members inspected the facility. The town's treatment system, which cost a fraction of a conventional system, is a model for the constructed wetlands under study for use at the Kim-Stan landfill site.

G. NOVEMBER 18, 1996, MEETING.

Due to the length and complexity of the Abandoned Waste Site Remediation Foundation draft legislation, the joint subcommittee was not able to complete its review during the August work session. Accordingly, the members completed their initial examination of the discussion draft, as well as a review of changes proposed at the prior meeting, during the group's November meeting. The meeting also included a presentation by DEQ's David Gillespie of the business/product sector breakdown of the Ogden risk assessment. The sector analysis is discussed on pages 9 and 10 of this report. The members of the joint subcommittee also received a presentation from staff identifying funding options for a waste site cleanup program.

The Abandoned Waste Site Remediation Foundation legislation attracted the interest of Mitretek Systems, Inc., a Virginia-based nonprofit corporation. Mitretek is exempt from federal income taxation under § 501 (c) (3) of the Internal Revenue Code. By soliciting charitable contributions from industry, Mitretek offered to assist the joint subcommittee by raising funds for waste remediation efforts and assuming any or all of the tasks of the proposed Abandoned Waste Site Remediation Foundation. Mitretek would be compensated for its efforts under sole source contracts with the Foundation.

Following Mitretek's presentation, the joint subcommittee agreed to revise the draft legislation to authorize the Foundation to retain a nonprofit entity with Mitretek's qualifications to perform all or any of its functions, including prioritizing sites and developing remediation plans.

H. DECEMBER 19, 1996, WORK SESSION.

The last meeting of the joint subcommittee was a work session focusing on the revised draft of the Abandoned Waste Site Remediation Foundation legislation and a proposal for financing abandoned waste site cleanups. The members endorsed the preparation of a bill for introduction in the 1997 Session incorporating provisions of the discussion draft, with certain amendments. The members asked that the legislation include a provision dedicating a portion of the civil penalties and civil charges currently paid into the Environmental Emergency Response Fund to the waste site remediation program. None of the other funding options identified by staff were recommended for inclusion in the legislation. A discussion of the financing proposal is contained on pages 36 through 38 of this report.

IV. ISSUES

The work of the joint subcommittee focused on two major issues: (i) developing legislation addressing the problem of abandoned waste sites and (ii) financing a program for the remediation of these sites.

A. ESTABLISHING A STATE ABANDONED WASTE SITE PROGRAM.

In the course of its three years of work, the joint subcommittee pursued the development of a state program to address contaminated properties that pose a risk to human health and the environment and for which there is no owner or other responsible person to conduct their cleanup. In its efforts, the joint subcommittee operated on the assumption that the Commonwealth is the appropriate entity to identify, prioritize, and oversee the cleanup of these sites.

1. The Abandoned Waste Site Authority Act -- House Bill 2040 (1995).

Following the joint subcommittee's fist year of work, the chairman patroned, and the vice chairman copatroned, House Bill 2040. This bill, enrolled as Chapter 598 of the 1995 Acts of Assembly, established the Abandoned Waste Site Authority Act. The measure passed the General Assembly and was signed by Governor Allen. However, the legislation contained a clause providing that it would not take effect unless reenacted by the 1996 Session of the General Assembly. The legislation was not reenacted and thus never took effect. A copy of the legislation is attached as Appendix N.

House Bill 2040 would have created the Virginia Waste Site Authority as a political subdivision of the Commonwealth. The Authority would be authorized to issue up to $25 million in revenue bonds pursuant to Article X, Section 9(d) of the Virginia Constitution. The proceeds from the bonds would be used to finance the cleanup of abandoned waste sites. DEQ and the Waste Management Board would be responsible for overseeing the remediation of waste sites and preparing cleanup plans.

The Authority would be operated by an eleven-member board of directors. It would not have an executive director or other administrative officer; the DEQ Director would administer its operations. The powers and duties of the Authority would be analogous to those of the Virginia Resources Authority (VRA).

Bonds issued by the Abandoned Waste Site Authority would be payable from a special fund, and would not have been backed by the faith and credit of the Commonwealth. However, its bonds would constitute moral obligation debt of the Commonwealth. As moral obligation debt, the bonds would be counted as tax supported debt if the Commonwealth is required to fund deficiencies in debt service reserves. Tax supported debt would be counted by debt rating agencies against the Commonwealth's debt capacity.

Unlike debt issued by the VRA, however, debt of the Abandoned Waste Site Authority would not be payable from an identified dedicated revenue source. House Bill 2040 was intentionally silent on the source of funding in order to permit the General Assembly to identify a dedicated funding source during the 1995 legislative session. The reenactment clause was added to the bill in recognition of the fact that a dedicated funding source had not been integrated into the legislation.

House Bill 2040 attempted to accomplish more than merely set up a debt financing mechanism. The bill defined an abandoned waste site as a parcel of real estate in the Commonwealth on which solid waste has been disposed in violation of a permit or otherwise in violation of state or federal law. The disposal must have occurred prior to January 1, 1995. In addition, adequate financial assurance to pay

for the site's cleanup must not have been provided and there must not be an owner, operator, or other financially responsible party who is able to pay for the cleanup. Sites on the NPL are excluded, as are sites owned by the state or a locality. In committee, coal refuse piles and abandoned mine lands were also excluded from the scope of abandoned waste sites. The definition reflected an attempt to focus the limited resources of the Authority on waste sites where no alternative source of revenue is available to pay for their remediation. By focusing on sites where the responsible parties are unable to pay for remediation, the definition could include sites that have an identified owner.

After identifying abandoned waste sites, the Authority was charged with developing, with the concurrence of DEQ, a list of projects to be undertaken in order of priority. The highest priority would be given to projects posing the greatest danger to public health and the environment. Resources would be allocated in the order established by the prioritized list.

The first step in the remediation process for a site on the prioritized list would be for the Authority to issue a declaration that the site threatens public health and the environment. DEQ, under the direction of the Authority, would monitor the site and develop plans for public participation in any remediation plan. DEQ, in consultation with the Waste Management Board, would then approve a remedial action program and implement the plan. If necessary, the Authority would be empowered to condemn a site. The cost of implementing the cleanup would be disbursed from an Abandoned Waste Site Fund. Finally, the Authority would be required to seek reimbursement from any person causing or contributing to the abandoned waste site's violation for his share of the cleanup costs disbursed from the Fund.

The joint subcommittee took advantage of the reenactment provision added to the Abandoned Waste Site Authority Act to scrutinize the legislation in the interim between the 1995 and 1996 legislative sessions. John Butcher of the Attorney General's Office, addressing the joint subcommittee in May 1995, identified several issues raised by House Bill 2040.

First, the Act defined contaminated property as "abandoned" if a party is "unable" to pay for its cleanup. This does not account for owners and operators who are able but unwilling to pay for the cleanup, and who seek to sequester their assets or to protect them through bankruptcy proceedings. The procedure for determining whether a person is unable to pay for a site's cleanup is not clear.

Second, the definition of "abandoned" excludes sites owned by the Commonwealth. This effectively precludes escheated sites from being defined as abandoned waste sites, and thus from being eligible for remediation, under the proposed program

Third, the Authority's condemnation power would be limited to instances where the condemnation would not subject the Commonwealth to liability under any state or federal law or regulation. Given the potential broad reach of RCRA, it would not be possible to acquire sites through the eminent domain process and comply with that limitation.

Finally, House Bill 2040's disclaimer of liability only addressed liability under the Virginia Waste Management laws. It was suggested that a broader limitation would be appropriate on liability under state law for persons involved in the site cleanup process.

2. Entry onto Abandoned Waste Sites -- House Bill 649 (1996).

Mr. Butcher's suggestions for improvements to the Abandoned Waste Site Authority Act were incorporated into legislation introduced in the 1996 Session as House Bill 649. House Bill 649, which would have revised and reenacted the 1995 version of the Act, also added provisions (i) authorizing the appointment of a receiver for abandoned waste sites, (ii) establishing a lien on abandoned waste sites, (iii) giving the Authority broad powers to enter abandoned waste sites for the purposes of conducting inspections and remediation, and (iv) barring the escheat of abandoned waste sites.

House Bill 649, introduced by the chairman of the joint subcommittee, passed the House of Delegates in substantially the same form as introduced. The introduced bill did not identify a dedicated funding source for the abendoned waste site program. Consequently, the Senate adopted an amendment in the nature of a substitute which limited the scope of the introduced bill to the issue of the right of access to abandoned waste sites. The substitute was intended to address access questions that were curtailing cleanup efforts at the Kim-Stan landfill. The substitute to House Bill 649 was agreed to by both houses and signed by Governor Allen as Chapter 547 of the 1996 Acts of Assembly. (See Appendix 0)

The definition of an "abandoned waste site" in Chapter 547 is narrower than that included in the Abandoned Waste Site Authority legislation. Sites which have an identifiable owner, operator, or other responsible person would be excluded from the definition. For purposes of the new § 10.1-1406.1, an abandoned waste site is a site for which there (i) has not been adequate remediation or closure, (ii) adequate financial assurance has not been provided, and (iii) the owner, operator, or other person responsible for the cost of clean-up or remediation under state or federal law or regulation cannot be located. Local governments and state agencies are authorized under this law to apply to the circuit court for the right of access to such sites in order to investigate contamination, abate hazards, or remediate the site. Persons performing such investigation, abatement, or remediation are given legal immunity from liability for their actions.

3. The Abandoned Waste Site Remediation Foundation -- House Bill 2026 (1997).

a. Background

The enactment of the substitute to House Bill 649 by the 1996 Session presented the joint subcommittee with the opportunity to refocus its efforts on developing a state program to address abandoned waste sites. At the joint subcommittee's first meeting of 1996, Mr. Butcher identified several issues relating to abandoned landfills that served as a basis for new legislation.

(1) Definition of abandoned landfills: It was suggested that abandoned landfills be defined as any property, whether or not the state has taken title to the property by condemnation, escheat, or otherwise, where solid waste has been treated, stored, or disposed of, and where the owner or operator or other responsible entity no longer exists, cannot be found, or has failed or refused to close the site in conformance with solid waste management regulations.

(2) Agency: A single agency should have control of both ownership and cleanup of abandoned landfills. This may be done either by creating a new authority or granting authority to an existing agency to own and clean up, or to serve as a receiver of and clean up, abandoned landfills. The question was posed as to whether current DEQ authority with respect to the Superfund program and other authorities for hazardous waste landfills should be left with DEQ or given to a new agency.

(3) Authority to declare a landfill abandoned: The declaration by an agency that a landfill is abandoned should be decided as a case decision under the Administrative Process Act. The procedure should require either a hearing under § 9-6.14:2 or, preferably, an informal proceeding under § 9-6.14:11. The procedure should require notice to owners of record, operators, and other parties, at their addresses of record. Substitute notice, such as service on the Secretary of the Commonwealth, should be provided for owners, operators, and other potentially responsible parties who cannot be found.

(4) Further authority: The agency should have the power to partly or fully close or to abate damage by abandoned landfills. The agency and its agents and contractors should be authorized to enter and inspect any property to determine the presence of solid waste. Legislation should provide an expedited procedure for a warrant (or administrative order in the case of an owner who cannot or will not clean up a site) for entry to property containing an abandoned landfill.

(5) Recouping cleanup costs: The agency should be authorized to bring an action to recover the costs of inspection, closure, and damage abatement. It should have a lien on the property to secure such costs. Debtor's interrogatories or other power to compel the disclosure of assets of current and prior owners, operators, and other responsible persons should be available.

(6) Ownership: Legislation should include statutory provisions for the receivership of abandoned landfills, including the authority to pay the receiver from available funds. The agency should be authorized to acquire ownership of abandoned landfills by purchase, gift, escheat, or condemnation.

(7) Escheat: The agency should have the authority to initiate, reverse, or prevent the escheat of abandoned landfills.

(8) Agency liability: The agency should have complete immunity from liability regarding decisions about whether or not to own, inspect, close, or abate damage by an abandoned landfill. Immunity from liability under state law for ownership of such sites should be clearly provided. In addition, receivers should have limited liability for their actions. Agency liability for inspection, closure, or damage abatement of abandoned landfills should exist only when the agency's acts are grossly negligent or intentionally wrongful.

b. Overview of House Bill 2026.

The joint subcommittee devoted much of its efforts in 1996 to developing a legislative proposal for an abandoned waste site remediation program incorporating these suggestions. The draft legislation was introduced in the 1997 Session as House Bill 2026. (Appendix P) The bill was patroned by the chairman of the joint subcommittee and copatroned by all of the other members.

House Bill 2026 sought to establish a comprehensive program for identifying, prioritizing, and remediating abandoned waste sites throughout the Commonwealth. A new entity, the Abandoned Waste Site Remediation Foundation, is established for the purpose of overseeing the program. In doing so, the joint subcommittee elected not to give the waste site remediation powers to the Waste Management Board or DEQ. The scope of the duties associated with owning and cleaning up these sites was better suited for an independent body than for an existing agency. The Virginia Outdoors Foundation provided a suitable model. Despite reservations expressed by the Secretary of Natural Resources' designee, it was the opinion of the members that these duties should be given to a separate foundation. The board of trustees would consist of members with relevant expertise. The joint subcommittee expressed reservations about giving the existing Waste Management Board substantial new time-consuming duties. Giving ownership of abandoned waste sites to a foundation may avoid conflicts arising from

making the Waste Management Board responsible for both owning the property and regulating its cleanup. Ownership of such sites by a foundation may also allow the Commonwealth to avoid liability associated with owning and conducting the cleanup of contaminated property. The focus of the new foundation would be on property administration and planning, rather than on permit issuance, regulatory matters, and enforcement. The Abandoned Waste Site Remediation Foundation would constitute a fourth citizens' policymaking board staffed by DEQ, which currently serves the Air Pollution Control Board, State Water Control Board, and Waste Management Board.

As a body politic and corporate, the Foundation would be given broad powers to acquire, hold and sell property designated as an abandoned waste site. The Foundation is governed by a nine-member board of trustees, comprised of four gubernatorial appointees, four legislative appointees, and the State Treasurer.

The Foundation's primary duties are to prioritize abandoned waste sites; develop plans for their remediation; and implement these plans to the extent resources are available. Where possible, the Foundation will encourage the voluntary remediation of abandoned waste sites through cooperative agreements with persons willing to clean them up in exchange for incentives, including (i) income tax credits, (ii) grants from the Fund, (iii) property tax exemptions, and (iv) limits on liability under environmental laws. If voluntary remediation is not possible, the Foundation has an array of options, including contracting for the cleanup and putting the property in receivership.

The joint subcommittee recognized that the funds available for cleanup should not be spent on establishing a new bureaucracy. Accordingly, the Foundation has no staff of its own. The DEQ Director will serve as executive secretary of the Foundation. DEQ personnel will provide staff support.

The joint subcommittee sought to clarify that an owner's walking away from the liability does not cause an escheat by operation of law, and that authority is needed to initiate, reverse, or prevent the escheat of abandoned waste sites. House Bill 2026 amends the escheat statues to provide that no property which has been designated as an abandoned waste site is subject to escheat unless the Foundation consents to the passage of title to the Commonwealth. (Appendix P, § 55-171)

Currently, the former owner of escheated property is liable for the cost of cleaning up hazardous materials. House Bill 2026 expands this provision to allow the Foundation to recover all costs of cleaning up escheated abandoned waste sites. (Appendix P, § 55-182.2)

c. Financing Provisions in HB 2026.

House Bill 2026 creates a special fund (the Abandoned Waste Site Remediation Fund) earmarked to finance the program. The Fund will receive money from civil penalties and civil charges paid in connection with abandoned waste sites. Currently this money goes to the Environmental Emergency Response Fund. Also, any money in the Environmental Emergency Response Fund over $500,000 will be deposited in the Abandoned Waste Site Remediation Fund. (Appendix P, § 10.1-1501)

The costs incurred by DEQ in providing certain services on behalf of the Foundation are reimbursable from the Fund. To the extent that House Bill 2026 imposes additional duties on the DEQ without providing money, additional resources may need to be appropriated to the agency.

The Foundation may contract with a nonprofit 501 (c) (3) corporation that has at least ten years experience in waste site remediation to carry out some or all of its functions. (Appendix P, § 10.1-1465 (10)) Mitretek Systems, Inc. has contacted the Joint Subcommittee and expressed a willingness to work with the Foundation, including soliciting contributions from the private sector. A Mitretek spokesperson has indicated that it may be able to raise between $7 million and $20 million annually for the program.

House Bill 2026 establishes an abandoned waste site remediation tax credit, whereby taxpayers remediating an abandoned waste site under a cooperative agreement can receive an income tax credit equal to 25 percent of their expenses in cleaning up a site in each of three years. The maximum amount of tax credits a taxpayer can receive is $1 million per site. The total amount of tax credits that can be authorized in any year is $5 million. The income tax credits will also be available to persons who contract with the Foundation to clean up sites. Allowing contractors to receive a tax credit may lower the price a contractor will charge to remediate a site, thereby saving money in the Abandoned Waste Site Fund. (Appendix P, § 58.1-439.6)

To encourage persons to enter into cooperative agreements for the voluntary cleanup of abandoned waste sites, the bill provides that "certified abandoned waste site remediation property" is exempt from local property taxes. This exemption is similar to the existing exemption for certified pollution control property, though in this case it is not a local option. The property tax exemption expires upon completion of the cooperative agreement. (Appendix P, § 10.1-3660.2)

In order to foster local government participation in abandoned waste site cleanups, the bill allows localities to establish tax increment financing programs. Under this option, a locality can agree that the portion of property tax revenues

from an abandoned waste site attributable to its increase in value resulting from its cleanup will be paid to the Foundation to help pay for the remediation. It is not anticipated that it will generate much money; however, in prioritizing abandoned waste sites for cleanup action, the Foundation will give a higher priority to sites where the locality provides this tax increment financing. (Appendix P, § 58.1-3245.6 et seq.)

d. Definition of Abandoned Waste Site

The Waste Management Board will determine, through the case decision process, whether a site meets the definition of an abandoned waste site. The Foundation plays no role in the designation process.

An abandoned waste site is a site where any substance within the jurisdiction of the Waste Management Board has been improperly managed and has not been closed as required by applicable law. In addition, the site must be one where (i) title has escheated to the Commonwealth; or (ii) the owner of record has ceased to exist and there is no known successor, as is the case with the Kim-Stan Landfill; or (iii) the owner cannot be determined; or (iv) the owner is known but the site is not occupied or regularly operated, and the owner cannot pay for the cost of remediating the site, and, if someone other than the owner is responsible for the improper management of the waste, it is unknown, has dissolved, or lacks the resources to pay for the cleanup.

A number of sites cannot be designated as abandoned waste sites: (i) coal refuse piles; (ii) property owned by local governments or the state (except escheated sites); (iii) property on the Superfund National Priority List; and (iv) property where remediated has been required under RCRA. (Appendix P, § 10.1-1400)

e. Summary of HB 2026's Abandoned Waste Site Remediation Procedure.

The following chronological overview illustrates several of the procedural mechanisms contained in the Abandoned Waste Site Remediation legislation:

(i) DEQ is given the power to enter a site to conduct testing without notice to an owner if the owner does not exist or is unknown. If contamination is found, DEQ is authorized to enter the site to clean it up. (Appendix P, § 10.1-1456)

(ii) DEQ is required to maintain an inventory of sites where waste has been improperly managed. If it determines that a site may constitute an abandoned waste site, it notifies the owner, if known. After 30 days, it may request the

Waste Management Board to determine whether it is an abandoned waste site. (Appendix P, § 10.1-1402.02)

(iii) The Waste Management Board, upon request from DEQ, conducts an informal fact-finding procedure under the Administrative Process Act to determine if it is an abandoned waste site, after notice to any known owner or operator. The Board's decision may be appealed. The Board may conduct discovery to determine if the owner or operator has assets to pay for the cleanup. (Appendix P, § 10.1-1402.02)

(iv) The Foundation establishes a list ranking all designated abandoned waste sites in priority of remediation. The ranking reflects the order in which available resources will be allocated to eliminate the greatest amount of risk to public health and the environment. The list takes into account the likelihood of voluntary cleanups through cooperative agreements, other possible sources of funding, and local government participation. The Foundation will hold at least one public meeting, but preparation of the list is exempt from the APA. (Appendix P, § 10.1-1466)

(v) The Foundation may adopt a remediation plan, consistent with the priority list, for each abandoned waste site. The Foundation may conduct discovery proceedings to determine what assets are available to pay for the cleanup. Before adopting a plan, the Foundation will hold a public meeting, but plan adoption is exempt from the APA. The Foundation shall, where feasible, allow voluntary remediation by cooperative agreements, and require owners and operators to pay for the remediation to the extent they can.

Options for remediation plans include voluntary remediation through negotiated cooperative agreements, under which the remediating party may be eligible for income tax credits, lower cleanup standards under § 10.1-1429.1, grants from the fund, and property tax exemptions; acquiring title to the site by condemnation, purchase, gift, or otherwise, and then contracting for cleanup; entering a site and contracting for its cleanup without acquiring title; asking a court for injunctive relief against an operator compelling him to clean up the site; asking a court to appoint a receiver, which may be the Foundation, to

administer, remediate, and sell the property; asking DEQ or the Waste Management Board to exercise any of their powers with respect to the site; or monitoring the site. (Appendix P, § 10.1-1467)

(vi) The Foundation is given the right of access to abandoned waste sites to conduct investigations and cleanups. Its powers mirror those given to DEQ under § 10.1-1456. (Appendix P, § 10.1-1472)

(vii) The Foundation will have a lien on abandoned waste sites for any money expended in remediation. This provision follows former § 10.1-1406, which was repealed in 1991. (Appendix P, § 10.1-1474)

(viii) The Foundation has the right to bring suit to recover cleanup costs from any person responsible for the contamination of a site. (Appendix P, § 10.1-1475)

(ix) The Foundation, DEQ, the Waste Management Board, and any contractor are immune from civil liability for actions other than gross negligence or intentional misconduct. (Appendix P, § 10.1-1478)

(x) The Foundation may sell remediated sites, with the proceeds going to the Fund. Persons acquiring remediated property from the Foundation have immunity from liability resulting from the prior contamination of the property. (Appendix P, § 10.1-1479)

(xi) The Foundation will make annual reports to the Governor and General Assembly regarding its activities. (Appendix P, §10.1-1484)

B. FINANCING THE REMEDIATION OF ABANDONED WASTE SITES.

The abandoned waste site remediation program proposed by House Bill 2026, unlike 1995's Abandoned Waste Site Authority Act, does not authorize the issuance of any bonds to finance site cleanups. HB 2026 contemplates that incentives for voluntary remediation of waste sites, through income tax credits, property tax exemptions, grants and liability limitations, will reduce the amount the Commonwealth would be required to spend for the cleanup of abandoned waste sites. The ability of Mitretek Systems, Inc. to solicit contributions was viewed as a means to allow the commencement of the task of identifying, prioritizing, and preparing plans for abandoned waste sites.

However, the members of the joint subcommittee recognized that incentives for voluntary remediation and tax-deductible contributions from the private sector would not be sufficient to adequately address a problem with a minimum estimated price tag topping $200 million. The joint subcommittee therefore continued to examine appropriate mechanisms for generating dedicated revenue for the program.

1. Options examined.

The joint subcommittee examined numerous options for financing the cost of remediating abandoned waste sites. Funding mechanisms adopted by other states provided models for study. Any examples of the use of similar funding approaches that have been implemented in the Commonwealth were also identified.

a. Waste generator fees.

A generator fee is levied on the basis of the type and amount of waste generated. The fee amount assessed against a generator may also vary depending on whether the waste is disposed of on-site or transferred to a landfill, incinerator, or other disposal site. By tying the amount of the assessment to the amount of waste generated, such fees can encourage source reduction, reuse, and recycling. Generator fees may require a state to create a new administrative system for fee accounting and collection.

The 1993 DEQ survey of state abandoned waste site funding mechanisms found that eight states use waste generator fees. Georgia's Hazardous Waste Management Fee is an example of this approach. Small generators are required to pay a fee of $100 per year. Large quantity generators are required to pay a fee of (i) $20 per ton of hazardous waste sent off-site for disposal, (ii) $16 per ton treated or stored, (iii) $9 per ton shipped off-site for burning for energy recovery, and (iv) $2 per ton recycled or reused. The maximum fee per generator is $75,000 per year.

Kentucky's Hazardous Waste Assessment Program also varies the rate of the generator fees based on the method of disposal. Liquid hazardous waste shipped off-site is taxed at $0.012 per pound; liquid hazardous waste kept on-site is taxed at $0.006 per pound; solid hazardous waste sent off-site is taxed at $0.002 per pound; and solid hazardous waste kept on-site is taxed at $0.001 per pound.

b. Disposal fees.

A disposal fee or tipping fee is imposed on waste at the landfill or other disposal point. By tying the cost of waste disposal to the amount landfilled, tipping fees can encourage alternative methods of waste management, such as reuse or recycling, and may make states imposing such fees less attractive as destinations for waste generated in other states.

The DEQ survey found that disposal fees are assessed in 15 states. States imposing tipping fees to finance waste programs include (i) Georgia, which levies both a $0.50 per ton fee on landfilled waste to fund its Hazardous Site Response Act and a $1.00 per ton fee to fund local waste management programs; (ii) New Jersey, which levies a $1.50 per ton tipping fee on all waste disposed of in the state; (iii) California, which levies fees totaling $1.29 on landfilled waste; and (iv) Tennessee, which charges a tipping fee of $0.85 per ton on waste dumped at municipal solid waste landfills.

c. Permit Fees.

Many states, including Virginia, use permit fee revenues only to cover the costs of administering waste disposal facility permitting programs. Several states use permit fees to generate revenue to finance a broader range of waste management efforts. New Jersey's aggressive revenue-producing permit fee system assesses fees ranging from $300 to $360,000, depending on the type and size of a waste management facility. Other states with permit fee systems include (i) Delaware, which assesses a $300 annual fee on waste transporters with five or more vehicles or who handle certain types of waste; (ii) Iowa, which assesses a permit fee on retailers selling hazardous household materials; and (iii) Tennessee, which imposes both permit fees and hauler fees. The DEQ survey reported that eight states levy fees on transporters of waste.

d. Product fees.

Fees imposed on sales of specific products which are used to finance waste disposal-related programs are often called pre-disposal fees. DEQ's survey indicates that five states use product fees to finance the remediation of waste sites. Such fees can be assessed at the manufacturer, wholesaler, distributor, or retailer levels. Pre-disposal fees allow states to collect costs of cleanup from particular sectors found to be responsible for a disproportionate share of such costs.

Products subject to pre-disposal fees include motor oil ($0.04 per quart in California and Texas; $0.08 per quart in South Carolina), lead acid batteries ($2-3 in Texas; $2 in South Carolina; $1 in Florida), and tires ($2 per tire in South Carolina; $1 per tire in Georgia, Kentucky and Tennessee; one percent of the cost of tires in North Carolina). Several states impose pre-disposal fees on white goods (large appliances such as washing machines and refrigerators) and brown goods (large electrical appliances such as televisions). Retailers in South Carolina collect a tax of $2 per white good sold. In Maine, the rate is $5 per white good, brown good or other hard-to-dispose items, such as mattresses.

Virginia currently levies several product fees to finance a variety of programs. Examples include:

(i) Litter tax (§ 58.1-1706 et seq.): Manufacturers, wholesalers, distributors and retailers of the following products must pay an annual litter tax of $10 per establishment: food for human or pet consumption, groceries, cigarettes and tobacco products, soft drinks and carbonated waters, beer and other malt beverages, wine, newspapers and magazines, paper products and household paper, glass containers, metal containers, plastic or synthetic fiber containers, cleaning agents and toiletries, drugstore sundry products, distilled spirits, and motor vehicle parts. Moreover, if the products handled include groceries, soft drinks and carbonated waters, or beer and other malt beverages, an additional litter tax of $15 is assessed per establishment. The litter tax generated $631,021 in 1995. The rate of the litter tax has not changed since 1981. Revenues from the tax are deposited in the Litter Control and Recycling Fund.

(ii) Soft drink excise tax (§ 58.1-1700 et seq.): Wholesalers and distributors of carbonated soft drinks pay an excise tax based the amount of their gross receipts. The amount of the annual tax ranges from $50 for businesses with gross receipts under $100,000 to $6,000 for businesses with gross receipts exceeding $10,000,000. The tax schedule has not increased since 1979. Revenue is generated in the Litter Control and Recycling Fund. The soft drink excise tax generated $156,656 in 1995.

(iii) Excise tax on beer and wine coolers (§ 4.1-236 et seq.): This tax is levied on beer and wine coolers sold in the Commonwealth. The tax rate is equivalent to between approximately 26 cents and 29 cents per gallon, depending on the size of the container. In 1995, the tax generated $725,043.

(iv) Petroleum Storage Tank Fund fee (§ 62.1-44.34:10 et seq.): Motor fuels, special fuels, and heating oil dealers are taxed at a rate of one-fifth of a cent to three-fifths of a cent per gallon, with the rate depending on the balance in the Storage Tank Fund. The tax, which is administered by the Department of Motor Vehicles, generated $12.8 million in fiscal year 1996. The Fund can be accessed to finance the cleanup of petroleum discharges from underground petroleum tanks.

(v) Waste tire tax (§ 58.1-640 et seq.): A fifty cent per tire tax is collected on all retail sales of motor vehicle tires in the Commonwealth. The tax is remitted by retailers to the Department of Taxation with sales tax returns. The tax generated $2.3 million in fiscal year 1996. On November 30, 1996, the Waste Tire Trust Fund had a balance of over $6.9 million, of which $5 million was obligated for end user reimbursements, cleanups of tire piles, and regional programs.

(vi) Forest products tax (§ 58.1-1600 et seq.): Manufacturers and shippers of wood products are required to pay a tax on forest products, the proceeds of which are earmarked for purposes of reforestation of timberlands and the protection and development of forest resources. The rate of the tax varies depending on the type and volume of the forest product manufactured or shipped. The tax generated $1.7 million in fiscal year 1996.

e. Bonds.

Several states have issued general obligation bonds to provide financing for waste site remediation. According to the DEQ survey, ten states have used this approach. Over $425 million of bonds have been issued under California's 1984 Hazardous Substance Cleanup Bond Act. Minnesota and Maryland have also used this technique. In Virginia, the issuance of general obligation bonds under Article X, Section 9(b) would require voter approval, and would use the Commonwealth's tax-supported debt capacity.

f. General.

DEQ's survey indicates that nine states rely in whole or in part on general fund appropriations to finance waste site cleanups. Options include appropriating to make grants to localities for site remediation and establishing revolving loan funds. North Carolina has made appropriations to its Inactive Hazardous Sites program. Tennessee's annual appropriation for waste site remediation programs is approximately $300,000.

g. Cost recovery against responsible parties.

Requiring responsible parties to reimburse the state for remediation costs is the most frequently used funding mechanism, and is used by 28 states according to the DEQ survey. However, the persons responsible for the contamination of abandoned waste sites often either cannot be determined or lack the resources to reimburse the state. Determining the amount due from numerous potentially responsible parties may prove difficult. Programs imposing joint and several liability, such as CERCLA, have been criticized for being unfair and fostering litigation.

h. Civil penalties.

Administrative penalties assessed against violators of waste management laws are used in seven states, according to the DEQ survey, to finance waste site remediation programs. The amount of revenue generated by this source can vary widely depending on a violator's ability to pay, the degree of enforcement, and the number and type of violations. States relying on this mechanism include Georgia, North Carolina, and West Virginia. North Carolina provides that administrative penalties are paid into an emergency response fund. However, money in the emergency response fund exceeding $500,000 is transferred to the Inactive Hazardous Sites Cleanup Fund.

Virginia also assesses civil penalties against, and collects civil charges from, violators of waste management laws. Courts may impose a civil penalty of $200 for

the improper disposal of solid waste. Violations of a solid waste permit or refusal to obey an injunction or mandamus can subject the violator to a civil penalty of up to $25,000 per day per violation. In lieu of a civil penalty the violator may agree to pay a civil charge to the Waste Management Board of up to $25,000 per day per violation. Approximately $400,000 was collected in fiscal year 1996 from civil penalties and civil charges arising from violations of the Commonwealth's environmental laws. Funds collected from this source are deposited in the Environmental Emergency Response Fund.

i. Other options.

A variety of other approaches are being or may be used to pay for the remediation of waste sites. A previous legislative study has also examined financing sources for a waste management program. A joint subcommittee examining tax incentives to encourage recycling in the Commonwealth considered four options for a solid waste management tax. A tax on all businesses ranging from $50 to $5,000 per year depending on the number of employees could generate over $23 million per year. Second, the litter control tax could be expanded to include all large waste generators. Third, a solid waste disposal surcharge of $2 per ton could be expected to raise $18.6 million annually. The fourth option called for a gross receipts tax on all businesses. (House Document No. 74; 1990)

The option of a gross receipts tax on all businesses served as the basis for House Bill 119, introduced in the 1990 Session by Senator William Fears. A solid Waste Advance Disposal Fee would be assessed against every person selling tangible personal property at a rate of one hundredth of one percent. The legislation passed both houses of the General Assembly but died when differences between competing House of Delegates and Senate versions of the bill could not be resolved in a committee of conference.

2. Connecting funding sources to responsible sectors.

The joint subcommittee was presented with options attempting to connect funding sources with the sectors contributing to the abandoned at risk waste identified in the Ogden report. DEQ estimated that 35 percent of the cost of remediating high risk sites was attributable to the wood product/preservation sector; 28 percent to miscellaneous sectors; 21 percent to landfills and dumps; 10 percent to metal foundries; and 6 percent to petroleum. (Appendix Q)

DEQ's sector analysis estimated that the cost of remediating at risk sites would be a minimum of $200 million. Based on a twenty year cleanup cycle, $10 million was suggested by staff as the amount required annually to finance a remediation program. At its November 1996 meeting, the joint subcommittee was

presented with funding options, including a combination of disposal fees, product fees, permit fees, penalties and general funds.

With respect to disposal fees, the members were cautioned that Commerce Clause considerations preclude the establishment of different rates for imported and in-state waste. The Supreme Court has held that municipal waste is an article of commerce and that states may not erect barriers to its interstate flow by assessing discriminatory rates based on its place of origin. Oregon Waste Systems v. Department of Environmental Quality, 511 U.S. 93, 128 L.Ed. 2d 13, 114 S.Ct. 1345 (1994). Georgia's attempt to charge a $10-per-ton tipping fee on out-of-state waste, while levying a much lower charge on domestic trash, was struck down in Southern States Landfill v. Georgia Department of Natural Resources, 801 F. Supp. 725 (M.D.Ga. 1992).

3. Funding proposal.

A proposal for a mix of new fees and expanded fees on products already subject to a pre-disposal tax was presented for discussion at the joint subcommittee's final meeting. The goal of this approach was to match pre-disposal fees to products and sectors in proportion to the distribution of responsibility identified by DEQ based on the estimated cost of remediating at risk sites. The proposal presented was estimated to generate between $7.9 million and $12 million annually to fund an abandoned waste site remediation program.

PROPOSAL FOR FUNDING REMEDIATION

Source	$ (millions)
Lead acid batteries	1.5
Tires	0.8
White Goods	1.1 - 2.0
Brown Goods	1.1 - 2.0
Treated Lumber	??
Litter	0.4
Soft Drink	0.1
Operating Permit	2.4 - 4.7
Civil Penalties/Charges	0.5
Total	7.9-12.0

a. New product fees:

A fee of one dollar per lead acid battery sold in the Commonwealth would generate an estimated $1.5 million annually. This estimate is based on South Carolina's collections indicating one battery sale per 4.2 people annually, extrapolated to Virginia's population of approximately 6.5 million. The fee would be

collected at the point of sale and remitted to the Department of Taxation with sales tax returns.

A pre-disposal fee on white goods of two dollars per appliance was estimated to generate between $1.1 million and $2 million. A similar tax on brown goods consisting of electrical appliances weighing over 10 pounds was estimated to generate an equivalent amount of revenue. The range in the estimates is attributable to discrepancies in the per-capita revenue generated by similar product fees levied in South Carolina and Maine. The proposal for a new product fee on treated lumber did not suggest a rate or an estimate of annual revenue collections because data on treated lumber sales was unavailable.

b. Increases in current pre-disposal fees.

An increase in the tire disposal tax from $0.50 to $0.75 per tire would generate an estimated $1.2 million annually. Of this amount, it was proposed that two-thirds ($800,000) would be used for waste site cleanups, and the balance would be kept in the waste tire trust fund and used for tire pile cleanups.

A proposed doubling of the litter tax rate would generate approximately $650,000 annually. The amount of the tax would jump from $10-$25 per establishment to $20-$50 per establishment. The proposal contemplated applying two-thirds of the revenue increase, or approximately $400,000, to remediating abandoned waste sites, with the balance of the increase being paid into the Litter Control and Recycling Fund.

If the soft drink excise tax was doubled, an estimated additional $150,000 would be generated each year. As with the litter tax, the proposal called for using two-thirds of this increase ($100,000) to clean up abandoned waste sites. The balance of the increase ($50,000) would be paid into the Litter Control and Recycling Fund.

c. Operating permit fee.

The largest amount of revenue for funding abandoned waste site remediation is a proposed operating permit fee on landfills. Such a fee would generate $2.4 million per year if assessed at a rate of $0.25 per ton, and $4.7 million if assessed at $0.50 per ton. The estimates are based on the 1995 figure of 9.4 million tons of waste landfilled in Virginia. The permit fee would be assessed on all active public, private, and industrial landfills, and would be based on the amount of solid waste disposed at the facility in the previous year or other reporting period. Different fee schedules could be adopted for each major category of waste, such as municipal solid waste, industrial waste, and construction/demolition debris.

d. Civil penalties/charges.

The proposal contemplated dividing civil penalties and civil charges equally between the Environmental Emergency Response Fund and abandoned waste site remediation. Based on an estimate of civil penalties and civil charges of $1 million annually, such an allocation could generate $500,000 per year for cleaning up abandoned waste sites. The Environmental Emergency Response Fund currently has a balance of approximately $3 million.

The proposal also contemplated a five-year sunset on funding provisions. This feature would give the General Assembly the opportunity to examine progress in cleaning up waste sites. It would also ensure a periodic review of the funding structure.

The joint subcommittee recommended that civil penalties and civil charges be used to finance abandoned waste site remediation, with amounts in excess of $500,000 in the Environmental Emergency Response Fund being transferred to the abandoned waste site program. A similar mechanism is in place in North Carolina. None of the other elements of the funding proposal were adopted.

V. FINDINGS AND RECOMMENDATIONS

During the course of its three years of work, the joint subcommittee has noted both the urgency of the need to address the problem of abandoned waste sites in the Commonwealth and the difficulty of structuring a comprehensive solution to that problem.

A. FINDINGS:

The joint subcommittee has found that:

- The Ogden risk assessment report's conclusions regarding the number of abandoned waste sites and the cost of their remediation provides valuable, if limited, information regarding the scope of the problem. The Commonwealth is home to between 230 and 441 at risk abandoned waste sites. Remediating these sites is estimated to cost between $201 million and $670 million. These estimates are acknowledged to be the best figures that could be ascertained given the limited budget for the risk assessment study and the assumptions noted in the Ogden report. Nevertheless, the data leads to the conclusion that many abandoned waste sites pose risks to the health and environment of the Commonwealth.

- An adequate program to address at risk abandoned waste sites does not exist in the Commonwealth. While the federal superfund program provides for the cleanup of the most dangerous sites, there is no comprehensive system for identifying, prioritizing, and cleaning up abandoned sites not on the National Priority List. Virginia's waste management laws currently authorize the Waste Management Board and DEQ to take actions to clean up sites or to issue orders to require cleanup of sites where substances within the jurisdiction of the Board have been improperly managed, and to abate hazards and nuisances dangerous to public health, safety or the environment created by the improper management of such substances. However, these broad powers have not been adequate to address the problem of abandoned waste sites. A solution to the abandoned waste site problem will require a comprehensive process providing for their identification, prioritization, and implementation of the optimum remedial approach on a site-by-site basis. Furthermore, the joint subcommittee was advised that existing laws do not adequately address a number of related issues, including entry of sites, ownership of abandoned property, and residual value.

- A program to address the abandoned waste site program should include incentives for the voluntary remediation of such sites where possible. Incentives for the voluntary remediation of such sites offer the potential of accomplishing their cleanup at lower cost and with fewer conflicts than a command-and-control based approach. To this end, the Commonwealth should offer tax credits, property tax exemptions, and other incentives to persons who voluntarily remediate abandoned waste sites. However, the joint subcommittee acknowledges that the limited incentives that can be provided will fall short of what may be required to ensure the cleanup of many sites. Therefore, a comprehensive system should authorize the Commonwealth to acquire or enter sites and provide for their cleanup, to provide for the appointment of a receiver, and to recover cleanup costs in appropriate circumstances.

- An abandoned waste site program need not require the creation of a new bureaucracy. To this end, DEQ should provide staffing and administrative services for the program. An independent foundation, modeled on the Virginia Outdoors Foundation, should be established to hold title to properties and be responsible for their remediation.

- Remediating at risk abandoned waste sites will be expensive. Using the minimum cleanup cost estimate of $200 million, a twenty-year program would require approximately $10 million annually. The joint subcommittee has not been able to recommend a source or sources of revenue that should be dedicated to funding the program. In order to start the process, a portion of the money in the Environmental Emergency Response Fund could be earmarked to abandoned waste sites remediation. In addition, utilizing a qualified non-profit entity, such as Mitretek Systems, Inc., to solicit contributions from the private sectors could provide the program with a source of capital.

B. RECOMMENDATIONS:

In order to address these issues, the joint subcommittee recommends the following:

1. By legislation, establish an Abandoned Waste Site Remediation Foundation to be responsible for prioritizing, preparing plans for the cleanup up of, and administering the remediation of abandoned waste sites in the Commonwealth (Appendix P).

2. The Commonwealth should seek to identify dedicated revenue sources to finance an abandoned waste site remediation program. Until an adequate financing mechanism can be determined, the abandoned waste site remediation program should be funded by a portion of the civil penalties and civil charges currently paid into the Environmental Energy Response Fund and by contributions solicited by a non-profit organization.

The joint subcommittee extends its gratitude to everyone who contributed to its efforts.

Respectfully submitted,

Del. R. Creigh Deeds, Chairman
Sen. Malfourd W. Trumbo, Vice Chairman
Del. Kenneth R. Melvin
Del. Kenneth R. Plum
Sen. Madison E. Marye

The Hon. Becky Norton Dunlop, non-voting ex-officio member of the joint subcommittee, dissents from this report for the reasons set forth in the attached memorandum from Hassan Vakili of DEQ to Brian Mannix dated May 16, 1997.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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MEMORANDUM

TO: Brian Mannix

FROM: Hassan Vakili

DATE: May 16, 1997

SUBJECT: Joint Subcommittee Report on Abandoned Waste Site Legislation

Following our review of the draft "Report of the Joint Subcommittee Examining the Appropriate Financial Role and Responsibility of the Commonwealth, if any, to Assist Localities in Remediating Abandoned Solid or Hazardous Waste Sites" (April 1997), (hereinafter referred to as "the Report") it appears that the Joint Subcommittee's recommendations do not address concerns previously communicated by the Department of Environmental Quality regarding H.B. 2026, Abandoned Waste Site Remediation Foundation and Fund.

DEQ's concerns relate to three aspects of the subcommittee's recommendations. The proposal would create an additional state entity, the Abandoned Waste Site Remediation Foundation (Foundation), with responsibilities overlapping that of the Virginia Waste Management Board, would involve the Waste Management Board in the conduct of fact finding proceedings to determine whether property is "abandoned", and would potentially subject the state as owner of contaminated property to liability for cleanup costs under federal environmental laws. Each of these concerns is discussed below.

Creation of a new state entity. An additional state entity with functions similar to, and in some cases overlapping with, those of the Waste Management Board and DEQ, could make the cleanup process for abandoned sites unnecessarily cumbersome. DEQ and the Waste Management Board would expend extensive resources to ensure that issues are properly coordinated with the new state entity. Examples include the coordination efforts needed to prioritize sites, as well as efforts to accommodate a site's participation in the Virginia Voluntary Remediation Program (VRP). DEQ currently administers the VRP and other remediation programs addressing the same kinds of issues as those associated with abandoned waste sites

and the agency is best-suited with the expertise to undertake the administration of any new initiatives for these sites.

The recommendation for a new Foundation is based partly on its ability to accept donations to assist with abandoned waste site funding requirements. However, in order to make a meaningful impact, the Foundation would need to maintain a revolving fund containing several million dollars and be able to disburse up to $20 million annually to meet the estimated cost of the remediation of all abandoned sites, which is in excess of $400 million. Without a Fund of that size, the creation of an additional policymaking Board staffed by DEQ would not greatly affect the overall environmental remediation efforts currently carried out by DEQ on behalf of the Waste Management Board under the Superfund, hazardous waste, and Voluntary Remediation programs.

The creation of a new Foundation, in combination with the proposal to allow the Foundation to contract out to third parties both the technical and administrative workload, may lead to additional problems. The delegation of rule-making and enforcement authorities to a contractor may give rise to conflict between the Board and DEQ on one hand and the Foundation and the contractor on the other. The Board is already authorized to take the enforcement and cost recovery actions necessary to meet the objectives of the abandoned waste site initiative.

New duties imposed upon the Waste Management Board. The subcommittee's proposal would alter the Waste Management Board's role as a policymaker. The recommendation requires the Board to conduct fact finding proceedings in accordance with the Virginia Administrative Process Act and to issue an order designating a property as an "abandoned" waste site. This proposal places substantial additional staffing requirements on DEQ to support the Board in the conduct of fact finding hearings, the preparation of orders, supporting appeals and conducting discovery proceedings to ascertain the assets of the owners or operators. There is no provision for charging the resources required to accomplish these actions against the Fund and this presents a problem based on the indication that there may be up to 400 "abandoned" sites requiring an expenditure of effort on the part of DEQ and the Waste Management Board.

State liability as the owner of contaminated property. The Report points out that, under H.B. 2026, the Foundation, DEQ, the Foundation's Board of Trustees, and any contractor are immune from civil liability for actions other than gross negligence or intentional misconduct. However, the proposed legislation and the subcommittee's report do not address concerns associated with the state's liability for site cleanup costs as the owner of a contaminated site under federal environmental statutes. The federal Superfund law includes only certain limited circumstances whereby a state is not subject to that law's liability provisions, and the federal Resource Conservation and Recovery Act contains no such provisions.

VIRGINIA ACTS OF ASSEMBLY – 1995 SESSION

CHAPTER 966
ITEM 495 C

C. There is hereby established a Joint Subcommittee to examine the appropriate financial role and responsibility of the Commonwealth, if any, to assist localities in remediation of abandoned solid or hazardous waste sites. The study committee shall be composed of three members of the House of Delegates, appointed by the Speaker, and two members of the Virginia Senate, appointed by the Committee on privileges and Elections. The Secretary of Natural Resources shall serve as an ex-officio member of the subcommittee, without a vote. Staff support for the subcommittee shall be provided jointly by the Senate Finance and House Appropriations Committees, the Division of Legislative Services and the Department of Environmental Quality. The Joint Subcommittee shall present a report, providing such recommendations as may seem appropriate, to the 1995 General Assembly.

VIRGINIA ACTS OF ASSEMBLY – 1995 SESSION

CHAPTER 853
ITEM 495 C

C. There is hereby established a Joint Subcommittee to examine the appropriate financial role and responsibility of the Commonwealth, if any, to assist localities in remediation of abandoned solid or hazardous waste sites. The study committee shall examine ownership, access and residual value issues associated with such sites and the establishment of financial responsibility for cleanup of such sites. The study committee shall also recommend appropriate funding mechanisms and a timetable for cleanup of those sites deemed to pose the most immediate threat to public health and safety. The study committee shall be composed of three members of the House of Delegates, appointed by the Speaker, and two members of the Virginia Senate, appointed by the Committee on Privileges and Elections. The Secretary of Natural Resources shall serve as an ex-officio member of the subcommittee, without a vote. Staff support for the subcommittee shall be provided jointly by the Senate Finance and House Appropriations Committees, the Division of Legislative Services, the Office of the Attorney General and the Department of Environmental Quality. The Joint Subcommittee shall present a report, providing such recommendations as may seem appropriate, to the 1996 General Assembly.

HOUSE JOINT RESOLUTION NO. 193

Continuing the Joint Subcommittee Examining the Appropriate Financial Role and Responsibility of the Commonwealth, if any, to assist localities in remediating abandoned solid or hazardous waste sites.

Agreed to by the House of Delegates, February 8, 1996
Agreed to by the Senate, February 21, 1996

WHEREAS, the 1994 Session of the General Assembly, pursuant to Item 495, Paragraph C of the 1994-96 Appropriation Act, established a joint subcommittee to examine the appropriate financial role and responsibility of the Commonwealth, if any, to assist localities in remediating abandoned solid or hazardous waste sites; and

WHEREAS, the 1995 Session of the General Assembly amended Item 495, Paragraph C of the 1994-96 Appropriation Act to continue the joint subcommittee and to expand the scope of the study to include (i) an examination of ownership, access, and residual value issues associated with such sites and (ii) recommendations for appropriate funding mechanisms and a timetable for cleanup of the abandoned solid or hazardous waste sites deemed to pose the most immediate threat to public health and safety; and

WHEREAS, due to the number and complexity of the issues involved, the joint subcommittee has agreed that another year of study is necessary; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Joint Subcommittee Examining the Appropriate Financial Role and Responsibility of the Commonwealth be continued. The joint subcommittee shall continue to examine the appropriate financial role and responsibility of the Commonwealth, if any, to assist localities in remediating abandoned solid or hazardous waste sites. In its deliberations, the joint subcommittee shall (i) examine ownership, access, and residual value issues associated with such sites and (ii) recommend appropriate funding mechanisms and a timetable for cleanup of those sites deemed to pose the most immediate threat to public health and safety.

The membership of the joint subcommittee shall continue to serve as appointed pursuant to Item 495, Paragraph C of the 1994-96 Appropriation Act. Vacancies shall be filled in the same manner as the original appointments.

The direct costs of this study shall not exceed $3,000.

The staffs of the House Committee on Appropriations, the Senate Committee on Finance, and the Division of Legislative Services shall provide staff support for the joint subcommittee. The Office of the Attorney General and the Department of Environmental Quality shall provide technical assistance to the joint subcommittee. All agencies of the Commonwealth shall provide assistance to the joint subcommittee, upon request.

The joint subcommittee shall complete its work in time to submit its findings and recommendations to the Governor and the 1997 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

Implementation of this resolution is subject to subsequent approval and certification by the Joint Rules Committee. The Committee may withhold expenditures or delay the period for the conduct of the study.

#

VIRGINIA ACTS OF ASSEMBLY – 1993 SESSION

CHAPTER 944
ITEM 399.2 C

C. The Department shall evaluate the number of abandoned waste sites within the Commonwealth for which significant corrective action would be required. This evaluation shall include a survey of the number of known abandoned solid and hazardous waste sites as well as an estimate of the cost to remediate those sites posing the highest degree of threat to health and the environment. The Department shall also include a summary of the mechanisms used in other states to provide funding for the remediation of such sites, and submit a report containing findings and recommendations to the Governor and the Chairmen of the Senate Finance and House Appropriations Committees by November 1, 1993.

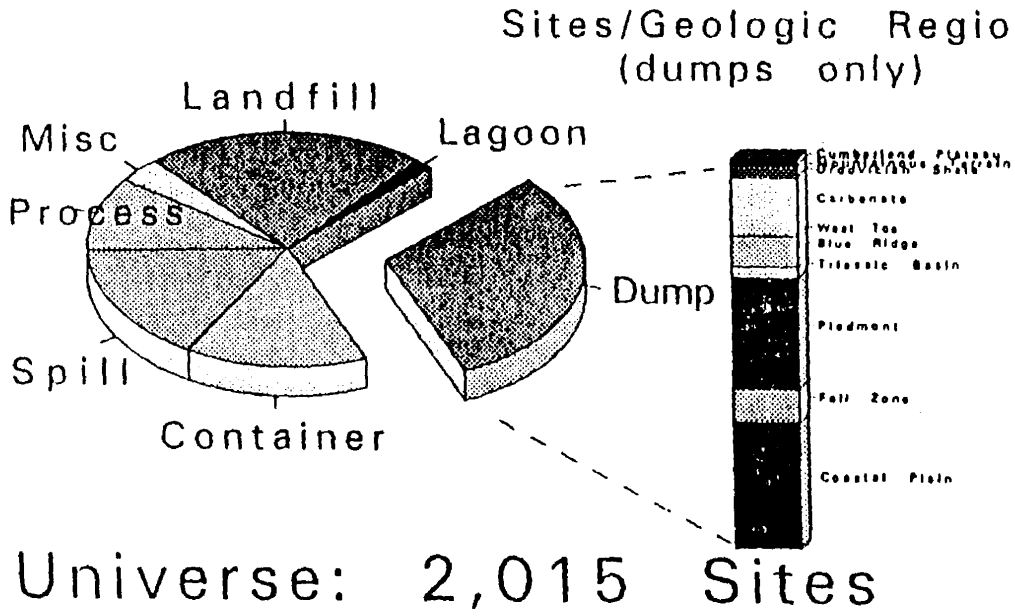
VIRGINIA ACTS OF ASSEMBLY – 1994 SESSION

CHAPTER 966
ITEM 495 B

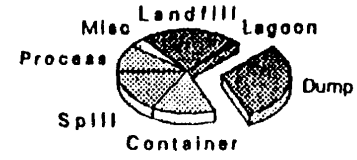
B. Included in this item is $125,000 in the first year to complete a comprehensive risk assessment related to abandoned solid and hazardous waste sites in the Commonwealth which require significant corrective action. The assessment shall provide estimates of the costs to contain or remediate identified risks, and it shall prioritize remedial actions which may be required based on the relative threat to public health or safety. An interim report, based on responsible scientific sampling techniques involving a randomly selected number of sites, shall be submitted to the Chairmen of the House Committees on Appropriations and Conservation and Natural Resources and the Senate Committees on Finance and Agriculture, Conservation and Natural Resources prior to December 1, 1994. A final report on these efforts shall be presented to the respective chairmen by October 1, 1995.

Figure 1: Sample Selection

Stratification & Proportionate Selection



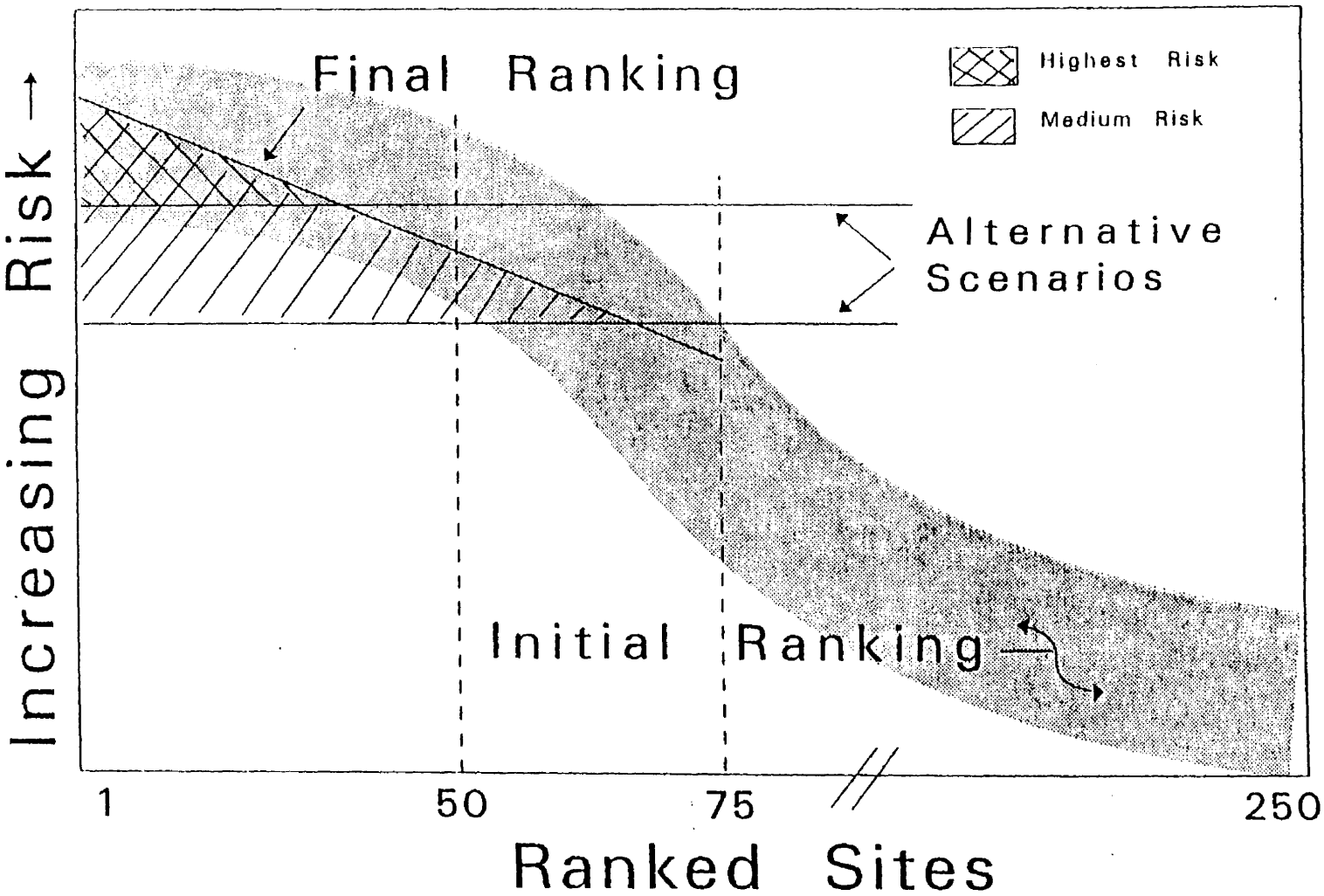
Universe: 2,015 Sites



Sample: 250 Sites

Source: DEQ, November 23, 1994

Figure 3: Risk Assessments



Source: DEQ, March 23, 1994

Remedial Cost Projections for the Universe ($million)

More Stringent Response Threshold		No. Sites	Best Case minimum	Best Case maximum	Worst Case minimum	Worst Case maximum
Non-abandoned sites--to be stricken		943	undetermined	undetermined	undetermined	undetermined
Abandoned Sites	Potential at risk sites	411	$279	$373	$499	$670
	Probable low risk sites	605	$0	$0	$0	$0
	Unable to project risk	56	unknown	unknown	unknown	unknown
TOTALS		2015	$279	$373	$499	$670

Less Stringent Response Threshold		No. Sites	Best Case minimum	Best Case maximum	Worst Case minimum	Worst Case maximum
Non-abandoned sites--to be stricken		943	undetermined	undetermined	undetermined	undetermined
Abandoned Sites	Potential at risk sites	371	$277	$370	$496	$666
	Probable low risk sites	645	$0	$0	$0	$0
	Unable to project risk	56	unknown	unknown	unknown	unknown
TOTALS		2015	$277	$370	$496	$666

Note: subject to all caveates relative to the representativeness of the redefined study set as enumerated in the report.

Remedial Cost Estimates in the Sample Set ($million)

More Stringent Response Threshold		No. Sites	Best Case minimum	Best Case maximum	Worst Case minimum	Worst Case maximum
Non-abandoned sites--Stricken		117	undetermined	undetermined	undetermined	undetermined
Abandoned Sites	Sites found at risk	38	$33.45	$44.45	$58.10	$76.05
	+ sites possibly at risk	13	$1.19	$1.84	$3.79	$7.04
	Sites found at low risk	64	$0.00	$0.00	$0.00	$0.00
	+ sites probably at low risk	11	$0.00	$0.00	$0.00	$0.00
	Sites not assessed for risk	7	unknown	unknown	unknown	unknown
TOTALS		250	$34.64	$46.29	$61.89	$83.09

Less Stringent Response Threshold		No. Sites	Best Case minimum	Best Case maximum	Worst Case minimum	Worst Case maximum
Non-abandoned sites--Stricken		117	undetermined	undetermined	undetermined	undetermined
Abandoned Sites	Sites found at risk	35	$33.30	$44.20	$57.85	$75.60
	+ sites possibly at risk	11	$1.10	$1.76	$3.74	$7.04
	Sites found at low risk	67	$0.00	$0.00	$0.00	$0.00
	+ sites probably at low risk	13	$0.00	$0.00	$0.00	$0.00
	Sites not assessed for risk	7	unknown	unknown	unknown	unknown
TOTALS		250	$34.40	$45.96	$61.59	$82.64

Source: Ogden, January 1996

APPENDIX I

Key to 250 Site Sample

Non-Abandoned Sites, Stricken (117 sites)

15 QUARRY SPOIL DEBRIS DUMP, WARREN
18 WISE MT. LANDFILL, WISE
19 MONTCLAIR COUNTRY CLUB DRUMS, PRINCE WILLIAM
21 TRANS CIRCUITS INC., FALLS CHURCH
28 DAVIS INDUSTRIES, FAIRFAX
29 I-95 LANDFILL (LORTON), FAIRFAX
31 INDEPENDENCE HILL, PRINCE WILLIAM
37 CHERRY HILL LANDFILL, PRINCE WILLIAM
41 THE PLACE WHERE LOUIE DWELLS, ALEXANDRIA
44 GMC DELCO DRUM/SLUDGE SITE, SPOTSYLVANIA
46 FREDERICKSBURG ROD & GUN CLUB, FREDERICKSBURG
48 HOOVER UNIVERSAL INCORPORATED, CAROLINE
50 FMC CORP., SPOTSYLVANIA
52 NORTHERN NECK COMBUSTION, RICHMOND
53 WOOD PRESERVES-LAGOON, RICHMOND
54 MOORES BUILDING SUPPLY, WINCHESTER
57 BROWNING FERRIS LANDFILL, CLARKE
59 WARREN COUNTY MIDDLE SCHOOL, WARREN
62 BINGHAM & TAYLOR LANDFILL, CULPEPER
69 VIRGINIA OAK TANNERY LANDFILL, PAGE
71 BRYANT WASTE MANAGEMENTJ, RT 610 & RT 670, BUCKINGHAM
72 GENERAL ELECTRIC, CHARLOTTESVILLE
73 CROUSE-HINDS COMPANY WASTE [Cooper Ind], ALBEMARLE
76 GARDNER JUNKYARD, ORANGE
79 VIRGINIA PLATING AND POLISHING, HANOVER
80 BEAVER DAM LANDFILL, HANOVER
81 RICHMOND LUMBER COMPANY, CHARLES CITY
85 GOOCHLAND COUNTY STATE FARM, GOOCHLAND
87 PHILBATES JUNKYARD, NEW KENT
88 RT 609 TALLEYSVILLE SITE, NEW KENT
90 VA AIR NATIONAL GUARD, HENRICO
94 WALTRIP LANDFILL, WILLIAMSBURG
96 SCHNEIDER LANDFILL, RICHMOND
97 REYNOLDS METAL DRUM [Lewis] Site, RICHMOND [Chesterfield]
98 RUTHERFORD JANITORIAL SUPPLY, RICHMOND
100 DOUGLAS CHEMICAL, RICHMOND [Henrico]
103 RICHMOND METRO AUTHORITY QUARRY, RICHMOND
104 BATTERY COMPANY DUMPING, HENRICO
105 HASKELL CHEMICAL PLANT, RICHMOND
109 REYNOLDS-SOUTHERN GRAVURE, RICHMOND
111 FT. DARLING LANDFILL, CHESTERFIELD
112 DSI TRANSPORTATION, RICHMOND
113 PHILLIP MORRIS, 4200 DEEPWATER TERM RD, RICHMOND
114 VEPCO- CASTLEWOOD RD, RICHMOND
116 EI DUPONT PLANT LANDFILL-RICHMOND, RICHMOND
119 BACK BAY DUMP, CHESAPEAKE
121 CITY OF CHESAPEAKE DRUM SITE, CHESAPEAKE
122 ELIZABETH RIVER TERMINAL SITE, CHESAPEAKE
127 FIELDS ESTATE PROPERTY, CHESAPEAKE
128 JACOBSON METAL COMPANY, CHESAPEAKE
129 N & W RAIL SITE -PORTLOCK YARD, CHESAPEAKE
136 VA BEACH GARDEN PARK SITE, VIRGINIA BEACH
137 E CALLIGORY, 133 INGLESIDE RD., NORFOLK
138 COMPESTELLA LANDFILL, NORFOLK
143 RIDGE ROAD DUMP, YORK
144 ANDREWS ST, HAMPTON
145 VA EMERGENCY FUEL STORAGE, YORK
148 WYEKOFF PIPE & CREOSOTING, PORTSMOUTH
149 PORTSMOUTH MARINE TERMINAL, PORTSMOUTH
150 RANDOLPH FARM DRUM SITE, CHESTERFIELD
152 TAYLOR-RAMSEY CORP, NOTTOWAY
153 F & S GENERATOR-WALTHALL, CHESTERFIELD
155 BON AIR LANDFILL, CHESTERFIELD
156 CHESTERFIELD FIRE DRUMS, CHESTERFIELD
157 JAMES RIVER SITE, CHESTERFIELD
158 BENJAMIN MOORE'S SOLVENTS, COLONIAL HEIGHTS
159 COBURN OPTICAL, COLONIAL HEIGHTS
160 COLONIAL HEIGHTS DUMPSITE, COLONIAL HEIGHTS
162 LEES MILL ROAD LANDFILL, FRANKLIN
163 COGENTRICS [JTM Industries], SOUTHAMPTON
164 CONTINENTAL FOREST DUMP, HOPEWELL
165 HOPEWELL CHEMICAL PLANT, HOPEWELL
168 STONE CONTAINER-LAGOON, HOPEWELL
174 J H WILLIAMS JUNKYARD, PRINCE GEORGE
177 FALWELL AVIATION, LYNCHBURG
178 ANDERSON TIRE COMPANY, BUCKINGHAM
179 LUNENBURG FARM, LUNENBURG
182 VA-EASTERN DEVELOPERS, ROANOKE
183 6405 COMMONWEALTH DR, SW, ROANOKE
185 ARCADIA DUMP, BOTETOURT
186 THOMPSON DRUM LANDFILL, MONTGOMERY
187 ELECTROPLATE-RITE CORP, PULASKI
191 CELCO DUMP, GILES
192 LYNCHBURG FOUNDRY PLANT, RADFORD
193 SOUTHERN ADHESIVE COMPANY (SEACO), HENRY
194 KOPPERS ROANOKE VALLETY PLANT, SALEM
196 MOWLES SPRING PARK LANDFILL, SALEM
197 SALEM ELECTRIC DEPARTMENT, SALEM
198 HOLDEN BATTERY SERVICE, BRISTOL
199 M. W. MARKET, BRISTOL
201 TWIN CITY IRON & METAL, BRISTOL
205 COPPER RIDGE ROAD SITE, RUSSELL
209 HERCULES PLANT- PULASKI, PULASKI
210 HERCULES-HIWASEE LANDFILL, PULASKI
211 AUSTINVILLE MINES, WYTHE
213 APPALACHIAN POWER COMPANY, GRAYSON
214 IVANHOE CARBIDE QUARRY, WYTHE
219 ALLIED CHEM-COVINGTON WORKS, COVINGTON
220 COVINGTON PLANT-EDGEMONT DRIVE, COVINGTON
222 AUGUSTA CORRECTIONAL INSTITUTE, AUGUSTA
223 STUMP'S SCRAP YARD, AUGUSTA
224 ARCHER CREEK LANDFILL, LYNCHBURG
225 LYNCHBURG TOWN GAS, LYNCHBURG
227 BUNCHER RAILCAR SERVICE COMPANY #2, LYNCHBURG
230 LYNCHBURG FOUNDRY-DISPOSAL, LYNCHBURG
231 AMHERST DRUM DISPOSAL AREA, AMHERST
232 BEDFORD PCB SPILL, BEDFORD
233 RUBATEX CORP HOLLAND FARM, BEDFORD
234 TRANSCONTINENTAL GAS PIPE LINE, PITTSYLVANIA
237 DISSTON LAGOON, DANVILLE
238 DIXIE AUTO SUPPLY CENTER, DANVILLE
239 GOODYEAR TIRE AND RUBBER, DANVILLE
243 BEASLEY FARM #1, CAMPBELL
245 GUTHERIE SCRAP METAL DUMP, HALIFAX
246 1ST PIEDMONT LANDFILL, PITTSYLVANIA
247 C-K COMPANY METALS, SOUTH BOSTON
248 SOUTH BOSTON SLUDGE DISPOSAL, SOUTH BOSTON

Sites Found "At Risk" (38 sites)

23 HERNDON LUMBER & MILLS WORKS, PRINCE WILLIAM
26 OFF RT 7, E. RT 28, LOUDOUN
30 ROY'S AUTO MACHINE, MANASSAS
38 OLD ROBINSON TERMINAL #1, ALEXANDRIA
39 ORONOCO & PENDLETON STS, BOGLE, ALEXANDRIA
40 RL RAND AND COMPANY, ALEXANDRIA
51 KING LAND LANDFILL, KING LAND CORP., ESSEX
63 JIM'S LIQUID WASTE, CULPEPER

Source: Ogden, January 1996

66 LIPICH FARM, FAUQUIER
67 BURDA PROPERTY, FAUQUIER
70 GANG-NAIL SYSTEMS INC, ALBEMARLE
75 EVERDURE INC, ORANGE
77 ELMONT DUMP, HANOVER
78 VA GALVANIZING CORP, HANOVER
83 WEYERHAUSER DUMP, HANOVER
95 WILLIAMSBURG PLANT LANDFILL, RT 60, WILLIAMSBURG
106 AT & T TECH SYSTEMS, RICHMOND
108 HYMAN VIENER & SONS, RICHMOND
117 1316 SMITH DOUGLAS RD, CHESAPEAKE
125 BERNUTH LEMBECKE TANKS, CHESAPEAKE
126 EPPINGER & RUSSEL, CHESAPEAKE
130 REPUBLIC CREOSOTING COMPANY, NORFOLK
134 MEARS PROPERTY, ACCOMACK
141 COMMONWEALTH WOOD PRESERVERS, HAMPTON
147 RL BRANDT & SONS, YORK
151 PETERSBURG TOWN GAS, PETERSBURG
167 NORWOOD WILSON SR FARM DUMP, HOPEWELL
169 DUPLAN CORP MCKENNY, DINWIDDIE
170 DUPLAN CORPORATION LANDFILL, DINWIDDIE
171 OLD MCKENNEY LANDFILL, DINWIDDIE
175 SUSSEX COMPANY TIRE FIRE, SUSSEX
184 AMERICAN VISCOSE COMPANY, ROANOKE
195 LEAS-MCVITTY TANNERY, SALEM
208 ALLIED CHEM CORP PULASKI WORKS, PULASKI
215 POWERBOSS INDUSTRIAL BATTERIES, SMYTH
216 BEVERLY EXXON, STAUNTON
228 LYNCHBURG FOUNDRY-DUMP, LYNCHBURG
229 LYNCHBURG FOUNDRY-TANKS, LYNCHBURG

Data Limited or Restricted (31 sites)

2 GLENLAND, GILES
3 MT. VALLEY DUMP, HENRY
4 WOOD PROPERTY, LOUISA
9 CRIDERS AREA DUMP, ROCKINGHAM
10 RED OAK RIDGE DUMP, RUSSELL
11 RTE 645 DUMP, SCOTT
12 RTE 718 DUMP, SCOTT
13 1 MI S. OF I-522 & 55, WARREN
14 1 MI W. OF U.S. 522, OFF DUCK STREET, WARREN
16 DAMASCUS OLD SITE, WASHINGTON
24 BEST REFUSE COMPANY OIL DUMPING, FAIRFAX
25 J & J ACRES LANDFILL, LOUDOUN
42 RT 725, DOSWELL, HANOVER [Caroline]
47 E. OF RT. 601 & N. OF RT. 3, KING GEORGE
55 PAPERMILL RD. LANDFILL, WINCHESTER
74 WRIGHT DUMP, NELSON
84 DONALD SIGMAN'S BACKYARD, HANOVER
107 CHARLES CITY LANDFILL, RICHMOND
115 C & R BATTERY LANDFILL, RICHMOND
123 1928 ORANGEWOOD ROAD, CHESAPEAKE
146 FOREST PIT DUMP, YORK
166 NORWOOD WILSON DUMP, HOPEWELL
172 A. FORBES & N. WILSON PROPERTY, PRINCE GEORGE
181 ROANOKE TOWN GAS SITE, ROANOKE
200 OLD SOUTHERN RAILROAD, BRISTOL
203 GOLDEN CHIP COAL, DICKENSON
212 I-81-DRAPER, PULASKI
217 HEINRICH FARM, STAUNTON
218 FRIDLEY SITE, RT 220 NORTH OF COVINGTON, ALLEGHANY
236 DANVILLE BRANCH PLANT, DANVILLE
240 MARSHALL CONSTRUCTION DUMP, DANVILLE

"Low Risk" Sites, No Remedial Costs (64 sites)

1 SKINKERS NECK DUMP, CAROLINE
5 CRAIG CREEK LANDFILL, MONTGOMERY
6 MULLER SITE, NEWPORT NEWS
7 JAMES BOWDEN SITE, RT 114 & PEPPER FAIRY RD. PULASKI
8 CAT POINT CREEK DUMP, RICHMOND
17 MUDHOLE DUMP, WISE
20 JEFFERSON STREET DUMP, FALLS CHURCH
22 DRUMS AND FISHKILL, FAIRFAX
27 SYCOLIN RD. & COCHRANMILL RD., LOUDOUN
32 MOUNT VERNON WASTE DUMP, FAIRFAX
33 NORTHERN VIRGINIA STEEL CORP, FAIRFAX
34 MELOY LABORATORIES INC LANDFIL, FAIRFAX
35 US PRINTING INC CORPARTION, FAIRFAX
36 UNITED FIBER GLASS CORPORATION, PRINCE WILLIAM
43 CHUCKS AUTO BODY SHOP, FREDERICKSBURG
45 YOUNG DRUM SITE, RT 608, STAFFORD
49 SALT MARSH DRUMS, WESTMORELAND
56 BERRYVILLE SITE, CLARKE
58 RUTHERFORD SALVAGE YARD, WARREN
60 RT 2 BOX 4, ESTON, FREDERICK
61 CHEMSTONE DRUMS, SHENANDOAH
64 RT 762, CULPEPER
65 COLLIER KINGSBURY ASBESTOS DUMP, MADISON
68 HAWKINS BODY SHOP, MADISON
82 SHIRLEY PLANTATION LANDFILL, CHARLES CITY
86 MOB JACK BAY DRUM SITE, MATHEWS
89 MORRIS SITE, NEW KENT
91 TALTON PROPERTY-TOANO, JAMES CITY
92 CAPITOL SITE, LOUISA
93 WALKER SITE , RT 262, MIDDLESEX
99 3334 STUART AVENUE APT. A, RICHMOND
101 430 CEDAR FORK RD, HENRICO
102 517 N. 28TH ST., RICHMOND, RICHMOND
110 BOHOLLOW DRIVE DRUMS, HENRICO
118 645 GREAT BRIDGE BLVD, CHESAPEAKE
120 BP LUMBER SITE, CHESAPEAKE
124 GIMMERTON CUT- DEEP CREEK, CHESAPEAKE
131 209 N. MAIN ST, ACCOMACK
132 CHESAPEAKE WILDLIFE FOUNDRY, ACCOMACK
133 MELFA WELL, ACCOMACK
135 MURRAY DEBRIS LANDFILL, VIRGINIA BEACH
139 NORFOLK ASPHALT TANK FARM, NORFOLK
140 K-MART CORPORATION-NN SITE, NEWPORT NEWS
142 CARYS CHAPEL DUMP, YORK
154 WOOD DALE RD. BARREL SITE, CHESTERFIELD
161 FRANKLIN DUMP, FRANKLIN
173 EDWARD COLLIER PROPERTY, PRINCE GEORGE
176 DEWEY RATES SITE, RT 767 & RT 695, PRINCE EDWARD
180 ROANOKE RIVER DRUM SITE, ROANOKE
188 MEADE CORP LANDFILL 2, FRANKLIN
189 LEWIS WAGNOR PROPERTY, MARTINSVILLE
190 TEXACO TERMINAL TANK, BEDFORD
202 AMERICAN CYNAMIDE DUMP, WASHINGTON
204 HAYSI ABANDONED TRANSFORMERS, DICKENSON
206 GLENN ROBERTS TIRES, WISE
207 STRAIGHT CREEK AT RT. 352, LEE
221 WESTVACO, NE QUAD OF PROPERTY, COVINGTON
226 A STORAGE INN, LYNCHBURG
235 PAULS AUTO PARTS WASTE SITE, DANVILLE
241 MOUNTAIN HILL RD., DANVILLE
242 WRENN DRIVE DUMP, DANVILLE
244 FRED BLAIR SITE, RT 29, PITTSYLVANIA
249 CLIFFIELD DRUM, TAZEWELL
250 RT 91, TAZEWELL

Source: Ogden, January 1996

No.	Sitename, locality	Sector	Risk*	Cost	Comments
75	EVERDURE INC, ORANGE	wood product	5.75	17.50	EPA removal action.
106	AT & T TECH SYSTEMS, RICHMOND	electronics	5.40	0.75	EPA site assessment program (archived).
130	REPUBLIC CREOSOTING COMPANY, NORF	wood product	5.23	4.50	EPA site assessment program.
30	ROY'S AUTO MACHINE, MANASSAS	automotive	4.93	0.33	EPA site assessment program.
216	BEVERLY EXXON, STAUNTON	petroleum	4.40	0.16	EPA site assessment program.
184	AMERICAN VISCOSE COMPANY, ROANOKE	textiles	4.25	0.88	EPA site assessment program.
151	PETERSBURG TOWN GAS, PETERSBURG	coal gas facilit	3.97	0.83	Voluntary Remediation Program.
26	OFF RT 7, E. RT 28, LOUDOUN	landfill	3.80	0.88	EPA site assessment program.
39	ORONOCO & PENDLETON STS, BOGLE, ALE	inorganics/he	3.77	0.15	EPA site assessment program.
125	BERNUTH LEMBECKE TANKS, CHESAPEAK	uncategorized	3.68	1.50	EPA site assessment program (archived).
126	EPPINGER & RUSSEL, CHESAPEAKE	petroleum	3.68	1.50	EPA site assessment program.
141	COMMONWEALTH WOOD PRESERVERS, HA	wood product	3.66	0.15	EPA site assessment program.
38	OLD ROBINSON TERMINAL #1, ALEXANDRIA	wood product	3.48	0.05	EPA site assessment program.
251	KIM-STAN SANITARY LANDFILL, ALLEGHAN	msw	3.29	5.00	EPA site assessment program.
170	DUPLAN CORPORATION LANDFILL, DINWID	landfill	3.09	0.06	EPA site assessment program.
171	OLD MCKENNEY LANDFILL, DINWIDDIE	landfill	3.06	1.98	EPA site assessment program.
40	RL RAND AND COMPANY, ALEXANDRIA	organic solve	3.04	0.28	DEQ response investigation.
195	LEAS-MCVITTY TANNERY, SALEM	tannery	3.03	4.50	EPA removal action.
108	HYMAN VIENER & SONS, RICHMOND	metals foundr	2.97	8.50	EPA site assessment program.
215	POWERBOSS INDUSTRIAL BATTERIES, SMY	automotive	2.85	1.50	EPA removal action.
95	WILLIAMSBURG PLANT LANDFILL, RT 60, WI	landfill	2.77	0.40	EPA site assessment program (archived).
187	NORWOOD WILSON SR FARM DUMP, HOPE	dump	2.77	0.05	EPA site assessment program.
117	1316 SMITH DOUGLAS RD, CHESAPEAKE	pulp & paper	2.67	0.08	EPA removal action.
147	RL BRANDT & SONS, YORK	ash	2.58	0.75	EPA site assessment program (archived).
229	LYNCHBURG FOUNDRY-TANKS, LYNCHBUR	metals foundr	2.49	0.78	EPA site assessment program (archived).
83	WEYERHAUSER DUMP, HANOVER	dump	2.35	0.78	EPA site assessment program.
51	KING LAND LANDFILL, KING LAND CORP., E	landfill	1.99	0.40	EPA site assessment program.
208	ALLIED CHEM CORP PULASKI WORKS, PUL	chemical indu	1.98	0.08	Voluntary Remediation Program.
77	ELMONT DUMP, HANOVER	landfill	1.98	1.50	EPA site assessment program (archived).
78	VA GALVANIZING CORP, HANOVER	metals plating	1.96	0.25	EPA site assessment program (archived).
134	MEARS PROPERTY, ACCOMACK	herbicides/pe	1.78	0.05	EPA site assessment program.
70	GANG-NAIL SYSTEMS INC, ALBEMARLE	wood product	1.76	0.23	EPA site assessment program.
228	LYNCHBURG FOUNDRY-DUMP, LYNCHBUR	metals foundr	1.73	0.05	EPA site assessment program.
169	DUPLAN CORP MCKENNY, DINWIDDIE	dump	1.47	0.41	EPA site assessment program (archived).
63	JIM'S LIQUID WASTE, CULPEPER	uncategorized	1.13	0.75	EPA site assessment program.
66	LIPICH FARM, FAUQUIER	msw	0.50	0.11	EPA site assessment program.
67	BURDA PROPERTY, FAUQUIER	uncategorized	0.39	0.11	EPA site assessment program.
23	HERNDON LUMBER & MILLS WORKS, PRINC	wood product	0.37	0.05	DEQ response investigation.
175	SUSSEX COMPANY TIRE FIRE, SUSSEX	automotive	0.31	0.23	EPA site assessment program (archived).
5	CRAIG CREEK LANDFILL, MONTGOMERY	landfill	0.12	0.00	No action needed (marginal).
4	WOOD PROPERTY, LOUISA	automotive	uncertain	unknown	Site contact not found.
212	I-81-DRAPER, PULASKI	dump	uncertain	unknown	Site contact not found.
74	WRIGHT DUMP, NELSON	dump	uncertain	unknown	Site contact not found.
25	J & J ACRES LANDFILL, LOUDOUN	landfill	uncertain	unknown	Site contact not found.
172	A. FORBES & N. WILSON PROPERTY, PRINC	dump	uncertain	unknown	Site access denied.

Source: DEQ

24	BEST REFUSE COMPANY OIL DUMPING, FAI	dump	uncertain	unknown	Site contact not found.
146	FOREST PIT DUMP, YORK	dump	uncertain	unknown	Site contact not found.
107	CHARLES CITY LANDFILL, RICHMOND	landfill	uncertain	unknown	Site contact not found.
84	DONALD SIGMAN'S BACKYARD, HANOVER	dump	uncertain	unknown	Site contact not found.
238	DANVILLE BRANCH PLANT, DANVILLE	landfill	uncertain	unknown	Beyond contract scope.
55	PAPERMILL RD. LANDFILL, WINCHESTER	landfill	uncertain	unknown	Site access denied.
115	C & R BATTERY LANDFILL, RICHMOND	automotive	uncertain	unknown	Site contact not found.
217	HEINRICH FARM, STAUNTON	landfill	uncertain	unknown	Site access denied.
166	NORWOOD WILSON DUMP, HOPEWELL	dump	uncertain	unknown	Site access denied.
218	FRIDLEY SITE, RT 220 NORTH OF COVINGT	construction	uncertain	unknown	Site contact not found.
203	GOLDEN CHIP COAL, DICKENSON	uncategorized	uncertain	unknown	Site contact not found.
240	MARSHALL CONSTRUCTION DUMP, DANVIL	construction	uncertain	unknown	Site access denied.
2	GLENLAND, GILES	construction	uncertain	unknown	Site contact not found.
47	E. OF RT. 601 & N. OF RT. 3, KING GEORGE	construction	uncertain	unknown	Site contact not found.
42	RT 725, DOSWELL, HANOVER [Caroline]	ash	uncertain	unknown	Site contact not found.
190	TEXACO TERMINAL TANK, BEDFORD	petroleum	negligible	0.00	No action needed.
206	GLENN ROBERTS TIRES, WISE	automotive	negligible	0.00	No action needed.
12	RTE 718 DUMP, SCOTT	automotive	negligible	0.00	No action needed.
1	SKINKERS NECK DUMP, CAROLINE	automotive	negligible	0.00	No action needed.
133	MELFA WELL, ACCOMACK	uncategorized	negligible	0.00	No action needed.
61	CHEMSTONE DRUMS, SHENANDOAH	mining/quarry	negligible	0.00	No action needed.
27	SYCOLIN RD. & COCHRANMILL RD., LOUDO	automotive	negligible	0.00	No action needed.
68	HAWKINS BODY SHOP, MADISON	automotive	negligible	0.00	No action needed.
99	3334 STUART AVENUE APT. A, RICHMOND	uncategorized	negligible	0.00	No action needed.
176	DEWEY RATES SITE, RT 767 & RT 695, PRIN	ash	negligible	0.00	No action needed.
6	MULLER SITE, NEWPORT NEWS	ash	negligible	0.00	No action needed.
221	WESTVACO, NE QUAD OF PROPERTY, COVI	pulp & paper	negligible	0.00	No action needed.
154	WOOD DALE RD. BARREL SITE, CHESTERFI	uncategorized	negligible	0.00	No action needed.
173	EDWARD COLLIER PROPERTY, PRINCE GE	uncategorized	negligible	0.00	No action needed.
226	A STORAGE INN, LYNCHBURG	uncategorized	negligible	0.00	No action needed.
180	ROANOKE RIVER DRUM SITE, ROANOKE	uncategorized	negligible	0.00	No action needed.
139	NORFOLK ASPHALT TANK FARM, NORFOLK	uncategorized	negligible	0.00	No action needed.
101	430 CEDAR FORK RD, HENRICO	uncategorized	negligible	0.00	No action needed.
35	US PRINTING INC CORPARTION, FAIRFAX	uncategorized	negligible	0.00	No action needed.
33	NORTHERN VIRGINIA STEEL CORP, FAIRFA	uncategorized	negligible	0.00	No action needed.
22	DRUMS AND FISHKILL, FAIRFAX	uncategorized	negligible	0.00	No action needed.
43	CHUCKS AUTO BODY SHOP, FREDERICKSB	automotive	negligible	0.00	No action needed.
58	RUTHERFORD SALVAGE YARD, WARREN	automotive	negligible	0.00	No action needed.
56	BERRYVILLE SITE, CLARKE	uncategorized	negligible	0.00	No action needed.
86	MOB JACK BAY DRUM SITE, MATHEWS	uncategorized	negligible	0.00	No action needed.
64	RT 762, CULPEPER	automotive	negligible	0.00	No action needed.
11	RTE 645 DUMP, SCOTT	roadside dum	negligible	0.00	No action needed.
200	OLD SOUTHERN RAILROAD, BRISTOL	railroad	negligible	0.00	No action needed.
140	K-MART CORPORATION-NN SITE, NEWPOR	uncategorized	negligible	0.00	No action needed.
60	RT 2 BOX 4, ESTON, FREDERICK	uncategorized	negligible	0.00	No action needed.

Source: DEQ

91	TALTON PROPERTY-TOANO, JAMES CITY	construction	negligible	0.00	No action needed
45	YOUNG DRUM SITE, RT 608, STAFFORD	landfill	negligible	0.00	No action needed.
132	CHESAPEAKE WILDLIFE FOUNDRY, ACCOM	metals foundr	negligible	0.00	No action needed.
89	MORRIS SITE, NEW KENT	automotive	negligible	0.00	No action needed.
110	BOHOLLOW DRIVE DRUMS, HENRICO	dump	negligible	0.00	No action needed.
8	CAT POINT CREEK DUMP, RICHMOND	dump	negligible	0.00	No action needed.
13	1 MI S. OF I-522 & 55, WARREN	dump	negligible	0.00	No action needed.
249	CLIFFIELD DRUM, TAZEWELL	dump	negligible	0.00	No action needed.
14	1 MI W. OF U.S. 522, OFF DUCK STREET, WA	dump	negligible	0.00	No action needed.
207	STRAIGHT CREEK AT RT. 352, LEE	dump	negligible	0.00	No action needed.
92	CAPITOL SITE, LOUISA	dump	negligible	0.00	No action needed.
3	MT. VALLEY DUMP, HENRY	dump	negligible	0.00	No action needed.
202	AMERICAN CYNAMIDE DUMP, WASHINGTO	dump	negligible	0.00	No action needed.
131	209 N. MAIN ST, ACCOMACK	dump	negligible	0.00	No action needed.
93	WALKER SITE , RT 262, MIDDLESEX	construction	negligible	0.00	No action needed.
102	517 N. 28TH ST., RICHMOND, RICHMOND	construction	negligible	0.00	No action needed.
241	MOUNTAIN HILL RD , DANVILLE	construction	negligible	0.00	No action needed.
118	645 GREAT BRIDGE BLVD, CHESAPEAKE	construction	negligible	0.00	No action needed.
135	MURRAY DEBRIS LANDFILL, VIRGINIA BEAC	construction	negligible	0.00	No action needed.
189	LEWIS WAGNOR PROPERTY, MARTINSVILL	construction	negligible	0.00	No action needed.
244	FRED BLAIR SITE, RT 29, PITTSYLVANIA	construction	negligible	0.00	No action needed.
10	RED OAK RIDGE DUMP, RUSSELL	dump	negligible	0.00	No action needed.
242	WRENN DRIVE DUMP, DANVILLE	dump	negligible	0.00	No action needed.
204	HAYSI ABANDONED TRANSFORMERS, DICK	dump	negligible	0.00	No action needed.
34	MELOY LABORATORIES INC LANDFIL, FAIRF	landfill	negligible	0.00	No action needed.
142	CARYS CHAPEL DUMP, YORK	landfill	negligible	0.00	No action needed.
9	CRIDERS AREA DUMP, ROCKINGHAM	landfill	negligible	0.00	No action needed.
82	SHIRLEY PLANTATION LANDFILL, CHARLES	landfill	negligible	0.00	No action needed.
17	MUDHOLE DUMP, WISE	landfill	negligible	0.00	No action needed.
65	COLLIER KINGSBURY ASBESTOS DUMP, MA	construction	negligible	0.00	No action needed.
188	MEADE CORP LANDFILL 2, FRANKLIN	landfill	negligible	0.00	No action needed.
124	GIMMERTON CUT- DEEP CREEK, CHESAPE	landfill	negligible	0.00	No action needed.
16	DAMASCUS OLD SITE, WASHINGTON	landfill	negligible	0.00	No action needed.
235	PAULS AUTO PARTS WASTE SITE, DANVILL	chemical indu	negligible	0.00	No action needed.
123	1928 ORANGEWOOD ROAD, CHESAPEAKE	dump	negligible	0.00	No action needed.
49	SALT MARSH DRUMS, WESTMORELAND	inorganics/he	negligible	0.00	No action needed.
250	RT 91, TAZEWELL	ash	negligible	0.00	No action needed.
36	UNITED FIBER GLASS CORPORATION, PRIN	fiber glass	negligible	0.00	No action needed.
7	JAMES BOWDEN SITE, RT 114 & PEPPER FA	construction	negligible	0.00	No action needed.
20	JEFFERSON STREET DUMP, FALLS CHURC	dump	negligible	0.00	No action needed.
161	FRANKLIN DUMP, FRANKLIN	dump	negligible	0.00	No action needed.
32	MOUNT VERNON WASTE DUMP, FAIRFAX	dump	negligible	0.00	No action needed.
120	BP LUMBER SITE, CHESAPEAKE	wood product	negligible	0.00	No action needed.

Source: DEQ

APPENDIX K

Sector Breakdown & Cost Projections

	Sample Data														Universe			Projections			
		Not Abandoned (stricken)							Abandoned												
Sectors	Total	non-site	active	closed	financial assure	can pay	mine exempt	government	other	Low Risk	Uncertain Risk	Al Risk	$total (M)	$/ risk $avg	# at risk	overall $avg	Total	gov or inact	$average (M)	Stricken	LowRisk	Al Risk	$Cost (M)
TANNERY	2					1						1	4.50	4.50	1 of 1	4.50	3	2	4.50	1.5		1.5	6.75
WOOD PRODUCTS/PRESE	10	1	2							1		6	22.48	3.75	6 of 7	3.21	31	12	3.75	9.3	3.1	18.6	69.69
METALS FOUNDRY/SMELT	7			3						1		3	9.33	3.11	3 of 4	2.33	15	8	3.11	6.4	2.1	6.4	19.99
TEXTILES	1											1	0.88	0.88	1 of 1	0.88	4	1	0.88			4.0	3.52
LANDFILL	43		5	3	2			12		6	7	6	5.21	0.87	6 of 21	0.25	267	78	0.87	136.6	71.4	69.0	51.22
COAL GAS FACILITY	3		1		1							1	0.83	0.83	1 of 1	0.83	5	5	0.83	3.3		1.7	1.38
PETROLEUM	3									1		2	1.66	0.83	2 of 3	0.55	23	11	0.83		7.7	15.3	12.73
UNCATEGORIZED	48		11	9	1	3		5		15	1	3	2.36	0.79	3 of 19	0.12	312	132	0.79	188.5	100.8	22.8	17.90
ELECTRONICS	1											1	0.75	0.75	1 of 1	0.75	12	4	0.75			12.0	9.00
ASH	6		1							3	1	1	0.75	0.75	1 of 5	0.15	65	16	0.75	10.8	37.9	18.3	12.19
AUTOMOTIVE	24	1	7			1		1		8	3	3	2.05	0.68	3 of 14	0.15	192	51	0.68	80.0	76.0	36.0	24.60
DUMP	41	3	2	3		1		2	3	12	12	3	1.24	0.41	3 of 27	0.05	403	129	0.41	137.6	176.9	88.5	36.56
ORGANIC SOLVENTS	6	1	3					1				1	0.28	0.28	1 of 1	0.28	96	51	0.28	80.0		16.0	4.48
METALS PLATING/GALVA	6	1	3	1								1	0.25	0.25	1 of 1	0.25	30	15	0.25	25.0		5.0	1.25
INORGANICS/HEAVY MET	4		2							1		1	0.15	0.15	1 of 2	0.08	19	10	0.15	9.5	4.8	4.8	0.71
MSW	7			3	1			2				1	0.11	0.11	1 of 1	0.11	55	24	0.11	47.1		7.9	0.86
CHEMICAL INDUSTRY	5		2		1					1		1	0.08	0.08	1 of 2	0.04	30	17	0.08	18.0	6.0	6.0	0.48
PULP & PAPER	3		1							1		1	0.08	0.08	1 of 2	0.04	26	13	0.08	8.7	8.7	8.7	0.69
HERBICIDES/PESTICIDES	2							1				1	0.05	0.05	1 of 1	0.05	37	11	0.05	18.5		18.5	0.93
CONSTRUCTION	21	1	2	1			1	2		10	4				0 of 14		340	136	0.25	113.3	194.3	32.4	8.10
RAILROAD	2					1					1				0 of 1		15	8	0.25	7.5	3.8	3.8	0.94
ROADSIDE DUMP	1										1				0 of 1		17	13	0.25		8.5	8.5	2.13
MINING/QUARRY	3			1				1		1					0 of 1		13	3	0.25	8.7	4.3		
FIBER GLASS	1									1					0 of 1		5	3	0.25		5.0		
Totals	250	8	42	24	6	7	1	27	3	64	30	38	63.04				2015	753		910	711	393	286.09

Notes: 'excludes "non-abandoned" sites; 'assumes $0.25m/site for sectors with no cost data;
'projects that ½ of "uncertain risk" sites require remediation.

Source: DEQ, July 10, 1996

Abandoned Waste Sites: Sector Breakdown with Cost Projections

	Sample (data)					Universe (projections)				
Sectors	Total	Stricken	Low Risk	At Risk	$Million	Total	Stricken	Low Risk	At Risk	$Million
WOOD PRODUCTS/PRESERVATI	10	3	1	6	22.48	31	9.3	3.1	18.6	69.69
LANDFILL	43	22	16	5	4.86	267	136.6	99.3	31.0	30.18
METALS FOUNDRY/SMELTING	7	3	1	3	9.33	15	6.4	2.1	6.4	19.99
UNCATEGORIZED	42	23	16	3	2.36	300	164.3	114.3	21.4	16.86
PETROLEUM	3		1	2	1.66	23		7.7	15.3	12.73
DUMP	39	11	25	3	1.24	382	107.7	244.9	29.4	12.15
ASH	6	1	4	1	0.75	63	10.5	42.0	10.5	7.88
TANNERY	2	1		1	4.50	3	1.5		1.5	6.75
ELECTRONICS	1			1	0.75	9			9.0	6.75
AUTOMOTIVE	24	10	12	2	0.55	192	80.0	96.0	16.0	4.40
ORGANIC SOLVENTS	6	5		1	0.28	91	75.8		15.2	4.25
TEXTILES	1			1	0.88	4			4.0	3.52
METALS PLATING/GALVANIZING	6	5		1	0.25	30	25.0		5.0	1.25
COAL GAS FACILITY	3	2		1	0.83	4	2.7		1.3	1.11
INORGANICS/HEAVY METALS	3	1	1	1	0.15	18	6.0	6.0	6.0	0.90
HERBICIDES/PESTICIDES	2	1		1	0.05	36	18.0		18.0	0.90
MSW	7	6		1	0.11	52	44.6		7.4	0.82
[illegible] & PAPER	3	1	1	1	0.08	24	8.0	8.0	8.0	0.64
[illegible]MICAL INDUSTRY	5	3	1	1	0.08	28	16.8	5.6	5.6	0.45
CONSTRUCTION	21	7	14			340	113.3	226.7		
PCB	5	5				11	11.0			
SEWERAGE/SLUDE	3	3				43	43.0			
RECYCLING/SALVAGE	3	3				14	14.0			
MINING/QUARRY	3	2	1			13	8.7	4.3		
ROADSIDE DUMP	1		1			17		17.0		
FIBER GLASS	1		1			5		5.0		
Totals	250	118	96	36	51.19	2015	903.2	882	229.8	201.19

Whole Sample Set Basis: 951.1 773.8 290.2 412.59

Source: DEQ, November 18, 1996

APPENDIX M

STATE	STATE FUND Y/N	NAME	SOURCE(S):	COMMENTS:
Alabama	YES	State Superfund	1. general fund 2. cost recovery	very small fund relies on the EPA
Alaska	Yes	Oil and Hazardous Release Response Fund	1. $.05/barrel of oil produced w/in Alaska 2. appropriated	
Arizona	YES	Water Quality Assurance Revolving Fund	1. landfill tipping fees 2. pesticide fees (store) 3. generator fees 4. transport fees 5. cost recovery 6. IGA interest	IGA-intergov't loan to the localities to assist in cleanup- must be paid back
Arkansas	YES	Remedial Action Trust Fund (RAT)	1. fees from generation and disposal of hazardous waste 2. monies from civil and criminal penalties 3. cost recovery	Monies from RAT is not exclusively used for cleanup projects
California				
Colorado	NO			
Connecticut	YES	State Superfund	1. state bond 2. cost recovery 3. lien on property	
Delaware	YES	Hazardous Substance Cleanup Fund	0.9% tax on petroleum and all petroleum products cost recovery	
Florida	YES	State Superfund	1. appropriations 2. cost recovery	

Source: DEQ, November 18, 1996

STATE	STATE FUND Y/N	NAME	SOURCE(S):	COMMENTS:
Georgia	YES	State Superfund	1. tipping tax and fees on hazardous and solid waste 2. fines and civil penalties collected by regulatory boards 3. cost recovery	-$75,000 cap/site -can collect 4x more from responsible parties for clean up
Hawaii	YES	State Superfund		new program, still working the program out
Idaho	NO			
Illinois	YES	Hazardous Waste Fund	1. tipping fees 2. cost recovery	
Indiana	YES	Hazardous Substance Response Fund	1. general fund 2. disposal tax 3. cost recovery	roughly $1-2 million in the fund annually
Iowa	NO			
Kansas	NO			some funding under the Spill Program
Kentucky	YES	Hazardous Waste Management Assessment Fund	1. Biennial assessment fee on all large and small generators 2. TFD sites subject to assessment collections on out of state waste 3. cost recovery	-$5/cubic ft off site, $2.50 kept on site; $.10/gal liquid off site, $.05 on site. -$3 million fund
[illegible] ana	YES	State Superfund	1. general fund 2. cost recovery	relies heavily on federal $$

Source: DEQ, November 18, 1996

STATE	STATE FUND Y/N	NAME	SOURCE(S):	COMMENTS:
Maine	YES	State Superfund	1. bond authorizations 2. cost recovery	-leg. in process of approving another referendum
Maryland	YES	State Superfund	1. bond authorization 2. cost recovery	
Massachusetts	YES	State SuperFund	1. bond authorization 2. transporter fees	now, revamping the program
Michigan	YES	Environmental Response Fund	1. state bond 2. cost recovery	state bond (Act 307) gave $425 million for cleanup
Minnesota	YES	State Superfund	1. chemical feed stock 2. cost recovery 3. tipping fees 4. some appropriations	strict Property Transfer Rule: Agreement to clean land before property transfer.
Mississippi	NO			
Missouri	YES	Hazardous Waste Remedial Fund	1. generator tax 2. cost recovery	strict property transfer rule
Montana	YES	Comprehensive Environmental Responsibility Cleanup Fund	1. interest from a state trust fund 2. state grant 3. cost recovery 4. penalties	
Nebraska	YES	Integrated waste Management Program and State Superfund	1. leg. appropriations on a site to site basis 2. cost recovery	Landfill Closure Assistance Fund est. to aid municipalities

Source: DEQ, November 18, 1996

STATE	STATE FUND Y/N	NAME	SOURCE(S):	COMMENTS:
Nevada	YES	Hazardous Management Fund	1. tipping fees 2. penalties 3. cost recovery	largest portion of the fund comes from tipping fees
New Hampshire	YES	NH Response and Remediation	1. public generating tax 2. import tax (hazardous waste) 3. bond (less than 5%)	
New Jersey	YES	Spill Compensation Control Act Fund	1. generator tax 2. tipping fees 3. transporter fees 4. bonds 5. cost recovery	NJ can charge 3x the amount w/ cost recovery
New Mexico	NO			
New York	YES	State Superfund	1. transport taxes on hazardous waste 2. cost recovery	raises $10 million annually
North Carolina	YES	Inactive Hazardous Sites Program	1. excess $ from emergency response fund 2. penalty fees	Fund is currently at $1.2 million
North Dakota	NO			
Ohio	NO			$ left over from the enforcement process is used for cleanup
Oklahoma	NO			has a Voluntary Clean up Program

Source: DEQ, November 18, 1996

STATE	STATE FUND Y/N	NAME	SOURCE(S):	COMMENTS:
Oregon	YES	Hazardous Substance Remediation Fund Orphan Sites Fund	1. tipping fee ($20/ton) 2. bond sale 3. solid waste disposal fee 4. hazardous substance possession fee 5. petroleum load fee	Orphan Sites Fund: $7.3 million (bond sale)
Pennsylvania	YES	State Superfund	1. transport and tipping fees 2. appropriated 3. cost recovery	Fees make up 1/2 or more annually
Rhode Island	YES	Division of Site Remediation	1. monies allocated from the Emergency Response Bond Fund 2. cost recovery	if the site is not of imminent harm, there is no money
South Carolina	YES	Hazardous Waste Contingency Fund	1. landfill tipping fees 2. cost recovery	
South Dakota	NO			no general fund relies on EPA and core grants
Tennessee	YES	State Superfund	1. cost recovery 2. general fund ($300,000) 3. generator and transporter fee 4. Core grants	Annual budget of $4-6 million
Texas	YES	State Superfund	1. fees on generators 2. fees on transport	
Utah	NO			
Vermont	YES	Vermont Environmental Contingency Fund	1. tax on disposal of hazardous waste 2. cost recovery	$100,000 cap per site w/o o.k. of leg.

Source: DEQ, November 18, 1996

STATE	STATE FUND Y/N	NAME	SOURCE(S):	COMMENTS:
Virginia				
Washington	YES	Cost Recovery Act	1. tax on the first in-state possession including petroleum 2. cost recovery	$3 million 53% for local govt cleanups 43% for state cleanup and prevention
West Virginia	YES	Hazardous Waste Emergency Response Fund	1. solid waste tipping fee 2. civil and administrative penalties 3. assessments made on generators of haz. waste, which makes up the largest portion of the fund 4. cost recovery	-can only assess 500,000/yr -can only collect $1.5 million/yr from assessments -must spend below $1 million annually
Wisconsin	YES	Environmental Repair Program	1. generator of solid waste tax 2. tipping fee 3. generator of pesticide tax 4. licensing fees	fund collects roughly $4 million annually
Wyoming	NO			

Source: DEQ, November 18, 1996

A copy of Chapter 598 can be found on page 915 in Volume I of the 1995 Virginia Acts of Assembly

VIRGINIA ACTS OF ASSEMBLY – 1996 SESSION

CHAPTER 547

An Act to amend the Code of Virginia by adding a section numbered 10.1-1406.1, relating to abandoned waste sites.

[H 649]

Approved April 3, 1996

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 10.1-1406.1 as follows:

§ 10.1-1406.1. Access to abandoned waste sites.

A. For the purposes of this section, "abandoned waste site" means a waste site for which (i) there has not been adequate remediation or closure as required by Chapter 14 (§ 10.1-1400 et seq.) of Title 10.1, (ii) adequate financial assurances as required by § 10.1-1410 or § 10.1-1428 are not provided, and (iii) the owner, operator, or other person responsible for the cost of cleanup or remediation under state or federal law or regulation cannot be located.

B. Any local government or agency of the Commonwealth may apply to the appropriate circuit court for access to an abandoned waste site in order to investigate contamination, to abate any hazard caused by the improper management of substances within the jurisdiction of the Board, or to remediate the site. The petition shall include (i) a demonstration that all reasonable efforts have been made to locate the owner, operator or other responsible party and (ii) a plan approved by the Director and which is consistent with applicable state and federal laws and regulations. The approval or disapproval of a plan shall not be considered a case decision as defined by § 9-6.14:4.

C. Any person, local government, or agency of the Commonwealth not otherwise liable under federal or state law or regulation who performs any investigative, abatement or remediation activities pursuant to this section shall not become subject to civil enforcement or remediation action under this chapter or other applicable state laws or to private civil suits related to contamination not caused by its investigative, abatement or remediation activities.

D. This section shall not in any way limit the authority of the Board, Director, or Department otherwise created by Chapter 14 (§ 10.1-1400 et seq.) of Title 10.1.

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A copy of House Bill No. 2026 is available from the General Assembly Bill Room

High Risk Pollution Source Distribution

by estimated remediation costs