

6. SOLID WASTE NEEDS ASSESSMENT

The existing solid waste management system was evaluated to identify specific needs to be addressed in the development of the Central Virginia Solid Waste Management Plan and its implementation. This assessment was based on an evaluation of the following factors:

- Capabilities of the region's recycling programs to continue to meet State mandated recycling goals;
- Consistency of existing waste management system with the State's waste management hierarchy and adopted Goal, Objectives, and Policies of the Plan;
- Capacity and capability of the components of the waste management system to meet existing and projected waste collection, transportation, and disposal needs; and,
- Environmental and other external impacts associated with existing waste management collection, transportation, and disposal techniques.

The needs assessment is divided into sections corresponding to the waste management hierarchy. It concludes with an assessment of planning and overall system needs.

Within the management hierarchy, needs are generally listed in order of priority from the most significant to the least.

6.1 LOCALITY INPUT

In the development of the preferred system it was critical that the system meet the anticipated needs of the member jurisdictions. To assure that this was true, the localities were surveyed as to what these anticipated needs might be. The following is a summary of the locality input that was carefully considered in the development of the preferred system:

1. Are there programmatic or operational issues with solid waste management activities in your locality that merit attention? If so, please describe. What, if any, products/waste streams would you handle differently? What additional products/waste streams do you anticipate a future need to find ways to collect, store, transport, transport and/or dispose of?

- Disposal of yard waste grindings/chips
- Review of convenience center facility (Colonial Heights)
- E-waste, including fluorescent bulbs disposal
- Restrictions on landfilling grass, leaves, yard waste...
- Vegetative Debris
- Yard Waste is a large problem. Large quantities are produced with little markets for them.
- Abandoned automobile fuel tanks
- Anticipate electronics to present a challenge in the future
- Brush & Leaf Disposal; Disposing of the mulch

2. Please describe any changes you anticipate to your current methods of collection and disposal of municipal solid waste. Do you anticipate any significant changes in volume? Do you anticipate changes in your collections done by public or private personnel and if so how? Do

you anticipate changes to your disposal by public or private landfill and if so how?

- Possibly privatizing convenience center and adding 1 or 2 more (Prince George) within the next several years
- Possible western convenience center (Goochland) within the next several years
- Possible eastern convenience center (Powhatan) within the next five years
- May add or delete a convenience center(s) (Hanover) over the planning period
- Adding a PBR yard waste composting facility (Hanover)
- Increases in trash volume through convenience center(s) (New Kent, Hanover, Chesterfield) as populations increase
- Springfield Road Landfill (Henrico) will be closed in about 10 years and transfer stations will ship waste to commercial facilities
- With shortages in qualified personnel, we will become more dependent upon both automating as many collection routes as we can, and continuing to explore contracting out our household collection. (Richmond)
- A private contractor is presently handling our disposal and we anticipate that to continue. (Richmond)

3. Do you have sufficient capacity? Do you anticipate any additional solid waste management facilities – collection stations, public landfills, private landfills, transfer stations, recycling facilities, etc – in your jurisdiction?

- Possible western convenience center (Goochland)
- Additional capacity (a second convenience center) required (Powhatan)
- May add or delete a convenience center (Hanover)
- Possibly adding 1 or 2 more convenience centers (Prince George)
- Adding a PBR yard waste composting facility (Hanover)
- Possible changes to existing convenience center (Colonial Heights)
- Expansion to Community Services Board paper processing facility (Hanover)
- Privately owned C/D/D facility in next 10-12 years (Chesterfield)
- Additional convenience center (Chesterfield)
- Shoosmith Bros., Inc. is planning to add cells at their existing landfill
- Transfer stations will be needed at the Springfield Road and Charles City Road public use areas. These may include recycling and yard waste management. (Henrico)
- An organic (biosolids & yard waste) processing facility for the Henrico Wastewater plant
- The disposal facilities being utilized by the contracted owner/operator of the transfer station we are using should have sufficient capacity. We do not anticipate any additional solid waste management facilities within the City of Richmond.
- Adding a yard waste composting facility at the Chesterfield Southern Area

4. What expansion do you anticipate to existing solid waste management and recycling programs?

- All recycling programs offered at the existing convenience center would be included at the new convenience center (Goochland)
- Some limited demand for the City to expand the recycling program to include curbside recycling (Hopewell)
- Expansion of private refuse collection (Hanover)

- Expansion of curbside program with County growth (Chesterfield)
- Expansion of Pay-As-You-Throw collection program (Chesterfield)

5. *Are there additional technologies or programs not currently in operation or available in your locality to be explored?*

- Additional private collection companies needed (Prince George)
- E-waste recycling
- Florescent Light tube recycling
- Recycled Content Procurement program
- Expansion of commercial recycling opportunities
- Addition of multi-family housing to curbside program (Chesterfield)
- Electronics recycling
- Waste To Energy? (Richmond)

6. *Are there additional issues or comments specific to your jurisdiction that you feel the CVWMA should consider in the development of the SWMP?*

- Regional collection and disposal of yard waste, brush... (Colonial Heights)
- Litter – Regionalization of anti-litter campaigns

6.2 PLANNING

Diversification of solid waste management practices and technology needs to be explored in the regional planning process to enable the Region to collectively meet the State recycling mandates and reduce reliance on landfill disposal. In 2003, the region generated over 800 thousand tons of municipal solid waste (including recyclables), of which 61 percent was disposed of in landfills.

Although landfill costs have historically been relatively inexpensive in the CVWMA area compared to other disposal methods, increased regulatory standards, liability questions, and public opposition to the siting of these facilities make it critical that other waste management strategies be pursued that reduce the reliance on landfill disposal. Furthermore, a significant portion of the region's excess landfill capacity is controlled by the private sector.

Current relatively cheap costs of landfill disposal and the heavy private sector investment in these facilities will render alternatives to landfills less attractive from a purely economic standpoint. A change in the economic conditions might cause localities to consider other options such as new landfills within their jurisdiction or alternative waste disposal means.

Specific programmatic objectives need to be established in the regional planning process. The region lacks any consensus on how much of its waste stream or what specific categories of waste will be targeted for reduction and diversion from final disposition in landfills. The waste stream is made up of distinct components that can be managed and disposed of separately. Therefore, the integrated waste management approach requires that programmatic objectives be established for the waste stream in the development and evaluation of waste management alternatives.

The regional solid waste management planning effort should continue to concentrate on front-end strategies with appropriate implementation (regulatory) and waste stream control options to divert waste from landfills, leaving the consideration and evaluation of back-end alternatives, such as new landfills and waste-to-energy techniques, to future plan updates. The service area has sufficient landfill capacity to meet expected waste disposal needs through the 20-year planning period given current demographic projections, economic conditions and regulatory situation. A change in any of these might result in the consideration of other options. Some individual localities will run out of space during the planning period. With this fact in mind, the concentration of regional and local efforts should be on front-end (prior to waste transfer and final disposal) waste management strategies that will reduce, in absolute terms, the amount of waste entering the region's landfills and prolong the life of these facilities.

These waste diversion strategies should consider a range of implementation (regulatory) options to accomplish the objectives of these strategies. The options explored in the planning process should range from voluntary and incentive-based programs to disincentive-based and mandatory programs.

Waste diversion strategies and major regional waste projects require some degree of control over the solid waste stream. At present, fully 40 percent the region's collected residential waste and almost all of the commercial and industrial waste is outside of local control. The economic viability and the effectiveness of various recycling and regional waste management programs may rest on the degree of waste stream control.

In the future, as available landfill capacity is used or becomes unavailable, resource recovery and other long-term volume reduction options may need to be seriously considered to manage the waste that cannot be diverted from traditional landfills through waste reduction, reuse, and recycling strategies.

Existing waste collection services are generally adequate and do not need to be addressed from a programmatic standpoint in the regional planning process, except to encourage increased productivity in municipal systems and to identify where new services are needed. A mix of public and private waste collection haulers serves the region. The municipalities, which provide these services, will continue to investigate ways to increase the productivity of their collection systems. The remainder of the waste collections service is provided by the private sector, which is market driven and highly competitive.

Therefore, the regional planning process needs to focus at the macro-level on the planning for services where needed rather than on the micro-level, which addresses detailed improvements needed to existing services. However, the magnitude of control of waste stream collection by the private sector requires that the regional planning process carefully consider the effects of any proposed new recycling and waste collection programs on private haulers. The need for specific regulatory and institutional changes to insure such programs will be effectively implemented by these haulers should also be considered.

The appropriate balance between the roles of the private and public sectors in solid waste management should be fully explored in the planning process. The policies of the Central

Virginia Solid Waste Management Plan emphasize the need for private sector involvement and participation in solid waste management. Approximately 70 percent of the region's waste is collected by private companies under contract with local governments or directly with individuals and firms. Most of the service area's waste is landfilled at private facilities.

Although the marketplace is providing services and solutions to the region's solid waste management needs in an efficient and cost-effective manner, too much dependence on this market, particularly for waste disposal, may entail some risk due to the uncertainty of future costs and availability of landfill space. However, these risks may be lessened by the amount of private landfill space already existing, and planned landfill capacity in new regional landfills located just outside the service area.

One problem with reliance on the private sector in the waste collection area is the lack of control of some aspects of the waste stream, which may be needed for various local/regional recycling and other waste management programs. However, it is believed that this problem is not significant in this region.

The appropriate governmental level (i.e. authority or local) for delivery and coordination of solid waste management services needs to be fully explored in the regional planning process. A major reason for the establishment of the CVWMA was to achieve economies of scale in the provision of recycling services (and other waste management services) and greater marketing power in the secondary materials marketplace. Local recycling programs would allow for more customized approaches and accountability to local officials. Duplication of local programs at the regional level or vice versa may not be cost-effective.

It is important that these programmatic responsibilities be rationally developed and that the cost differences between local and regional alternatives for various recycling and other waste management programs be identified in the alternatives evaluation process.

Public information and education programs are needed to adequately address the full spectrum of solid waste management issues and to improve the success and participation rates of waste management initiatives. Public education pieces and public service announcements specific to the region, supplying regional facts, specific information about recyclable materials, locations of facilities, dates of events, and promotion of special programs, must continue to be developed. Public education programs include presentations to students and community groups.

Wherever possible, the responsibility for these public information and education programs should be developed and/or coordinated at the regional or multi-governmental level. However, no consensus exists on an appropriate balance between regional and ongoing local educational efforts. Specific attention should be given to developing such a consensus.

6.3 SOLID WASTE INFORMATION AND DATA

Adequate and reliable information on solid waste collection, disposal, recycling, source reduction and reuse activities is needed. In order to more accurately determine solid waste

management and recycling activity in the service area and make more reliable waste generation estimates and projections, reporting of waste generation and disposal characteristics must be improved.

More reliable and accurate information on the composition of the region's waste stream is needed. The existing estimates of waste composition were based on Environmental Protection Agency national statistics. It would be highly useful, if some statistically accurate level of sampling of landfilled wastes were conducted within the service area to develop a more accurate and reliable database.

6.4 SOURCE REDUCTION AND REUSE

Public and private waste reduction and reuse programs appropriate for meeting solid waste management needs of the service area need to be defined. Source reduction and reuse are particularly cost-effective management techniques, since they reduce the amount of waste entering the waste stream. Specific regional and local programs worthy of support should be identified and evaluated, particularly their potential impacts on recycling programs. One aspect of this program should focus on waste exchanges, which link waste generators with waste users.

Information on current source reduction and reuse programs and activities is needed. The current level of source reduction and reuse in the service area is unknown. Although some level is certainly occurring, further work and investigation are necessary to provide a better understanding of existing efforts in this area.

6.5 RECYCLING

Additional markets must be secured for recyclables, and existing public and private efforts expanded to pursue a cost-effective mix of recycling programs that target portions of principal recyclable materials for diversion from the waste stream. To be effective, recycling markets must be developed and secured, and industrial and national barriers to recycling must be overcome. Without available markets that will accept the recyclables, recycling programs will become more difficult to sustain. At local and regional level political and social changes must be sought that encourage the use of secondary materials and the development of industries that use or process these materials.

Although the region's current recycling rate enables the region to meet the state's recycling mandates, decisions must be reached during the planning process on what level of waste diversion is desirable to divert further waste from going to landfills, meet public and political expectations, and to respond to possible changes in the state mandated recycling rates or definitions. The current recycling rate, as strictly calculated under the State regulations, is approximately 39 percent. The region may have additional opportunities for recycling its waste products that have not as yet been pursued such e-waste.

Any recycling programs and corresponding target levels should be based on a thorough evaluation of the cost-benefits of these programs, particularly compared to alternative waste reduction and disposal strategies.

The costs and benefits of recycling programs should be balanced with other environmentally sound disposal methods in addressing the region's solid waste management needs. Recycling is a stated public policy in the Commonwealth of Virginia and has widespread public support; however, any cost-effective integrated solid waste management program to address waste management needs must consider that recycling will not address all the disposal needs of the region, nor will waste reduction strategies.

The volatility of recycling markets, the economic disadvantage of some secondary materials versus primary materials in the production process, the institutional, social, and legal barriers to recycling, and the relative low-costs of landfills and availability of landfill capacity and siting space in the region make it more difficult to pursue rigorous and highly ambitious recycling programs. Full consideration should be given to the costs and benefits of each waste management strategy.

6.6 SPECIAL WASTES MANAGEMENT

Expansion of programs and markets for reuse, recycling, and proper disposal of special wastes such as tires, motor oils, batteries, e-scrap are needed. All of these wastes have some degree of environmental consequences, particularly those wastes that are discarded without proper disposal.

Some localities are neither currently participating in the Safe Garage (used oil, oil filters, antifreeze and paints) Program, nor do they have their own locally managed program. Other localities however, have their own locally managed program.

Although recycling of batteries is close to 80 percent, the hazardous nature of the batteries requires that they be recycled or disposed of properly in a certified disposal facility.

Currently there is no ongoing e-cycling program in any of the localities within the Region. It is anticipated that this issue will be addressed.

Programs to properly manage and dispose of tires are needed. While many of the localities are participating in the tire recycling program or have their own program, some tires are still being stockpiled or improperly dumped; however, more adequate information is needed on the amount of tires stockpiled or dumped.

Data are lacking on land-clearing, construction debris, demolition, and ash wastes. Little data currently exists in the region concerning many of the aforementioned special wastes or how much of these wastes are being reused or recycled.

Non-landfill techniques for the disposal of Class A wastewater sludge have proven to be effective for the recycling of these wastes; however, health and environmental concerns require that these practices to be closely monitored. Almost all of the municipal wastewater sludge within the Region is being land applied to fertilize farmland. Future regulatory changes may impact on this process. At that time the Region will consider options to include (but not

limited to) mulch facilities to combine yard waste and the sludge for the disposal of the sludge.

6.7 RESOURCE RECOVERY

Waste-to-energy alternatives need some future consideration for disposal of a portion of the service area waste stream as a possible long-term option. Although existing landfill capacity and the impacts of recycling programs will make new landfills, except in some specific local situations, optional for the region, an opportunity may arise for considering a major waste-to-energy facility(ies) for meeting the areas needs beyond the 20-year period or sooner should existing reserve landfill capacity not be available, economically viable or problematic for some unforeseen reason or should problems occur in the recycling programs.

The Richmond Tri-cities Area Resource Recover Economic Feasibility Study, completed in 1988, found that waste-to-energy technology was feasible for the region. However, since that time, the expansion of cost-effective landfill capacity in the region, the emphasis on recycling strategies by the State and public, the problems with this technology and opposition from environmental groups have led this Region to drop this option as a near-term waste management alternative.

A report by the firm of Smith Barney (Pollution Control Monthly, February 1991) states that no matter "how the landfill and recycling segments develop," waste-to-energy will remain a necessary part of the solid waste management system. It goes further to state that if recycling is "rationally planned, it can make both economic and environmental sense. But as the bills for local recycling programs begin to come in, many communities with particularly aggressive recycling goals may begin to reevaluate those objectives, and perhaps, take another look at the waste-to-energy option."

Despite serious environmental concerns about this technology, approximately 14% of solid waste is burned at 102 facilities spread over 31 states. These facilities generate 2,800 megawatts of electricity and serves disposal needs of more than 37 million people across the United States.

6.8 VOLUME REDUCTION AND INCINERATION

The reduction of waste volume through incineration or other techniques does not appear to be a viable option for the region at this time. Incineration of waste without any resource recovery is wasteful and provides little societal benefits to offset the potential adverse environmental aspects of this technology. Furthermore, the abundance of projected existing landfill capacity under current conditions minimizes the necessity and economic feasibility of any type of volume reduction technique. Other volume reduction technologies, such as mass composting and mixed waste recycling, have certain problems and may not be very cost-effective when linked to various types of front-end recycling programs. Some jurisdictions may initiate small scale composting such as the vermi-composting in Hanover County.

However, the uncertainties and volatility of the recycling markets and potential unforeseen actions that might affect the availability of economically viable landfill capacity may make it necessary to consider other options.

6.9 LANDFILLING

The existing public and private landfill capacity available to the region should satisfactorily handle the area's needs throughout the 20-year planning period. Public and private landfills within the service area had an estimated capacity of over 25 million tons in 2002. Assuming a conservative growth of waste coming to these landfills from outside of the region and the use of several landfills outside the Region, the service area will still have available capacity in 2024. This highly conservative estimate assumes no increase in the current recycling rate, nor any increased capacity that can be achieved at existing landfill sites.

Most of this landfill capacity is privately owned and may not prove to be economically feasible for use by a locality due to transportation costs and other factors. Reliance on private landfills entails some risks due to uncertainties; therefore, it is important that any management alternatives proposed in the planning effort provide sufficient flexibility and contingencies to deal with unexpected and changing conditions.

Some localities may require additional landfill space during the 20-year planning period.

Although the region will have surplus landfill capacity, some localities within the service area will need to make decisions during the planning period on securing additional or new landfill space. The following is a breakdown of the individual MSW landfill needs of each locality:

- Charles City County: It is anticipated that the County's solid waste disposal needs can be met with existing processes and facilities (Waste Management Charles City Landfill). Unforeseen regulatory actions, demographic changes, and/or economic conditions (e.g. tipping fees) could result in the need for the County to consider other options such as securing additional or new landfills or other solid waste disposal means.
- Chesterfield County: Barring unforeseen regulatory actions, demographic changes, and/or economic conditions (e.g. tipping fees), the County's waste disposal needs will be met by the Shoosmith Landfill or some other contracted private landfill.
- Goochland County: Currently contracting with Waste Management through 2013 for waste disposal of approximately 7,000 tons collected at the convenience center. It is anticipated that this or a similar arrangement will continue throughout the planning period.
- Hanover County: Currently contracting with the Shoosmith Bros. Landfill in Chesterfield. It is anticipated that this capacity or other contracted private landfill capacity will continue to meet the County's needs barring unforeseen regulatory actions, demographic changes, and/or economic conditions (e.g. tipping fees).
- Town of Ashland: BFI is collecting and disposing of the Town of Ashland's municipal solid waste. Ashland will continue to contract its disposal needs.
- Henrico County: The County requires approximately 110,000 tons to be landfilled annually. This is currently going to the Springfield Road landfill. It is anticipated that this

Landfill will close in 2012. At that time, Henrico may contract with a private landfill operator who may or may not be located within the County.

- New Kent County: Currently contracting with Waste Management through 2013 for waste disposal of approximately 7,600 tons collected at their four convenience centers. It is anticipated that this capacity or other contracted private landfill capacity will continue to meet the County's needs barring unforeseen regulatory actions, demographic changes, and/or economic conditions (e.g. tipping fees).
- Powhatan County: Currently contracting with Waste Management through 2013 for waste disposal of approximately 7,800 tons collected at their convenience center. It is anticipated that this capacity or other contracted private landfill capacity will continue to meet the County's needs barring unforeseen regulatory actions, demographic changes, and/or economic conditions (e.g. tipping fees).
- City of Richmond: The City has a contract with Waste Management for the disposal of MSW. It is anticipated that this or a similar arrangement will continue throughout the planning period.
- City of Hopewell: No anticipated needs since the City contracts through the CVWMA for the collection and disposal of MSW. It is anticipated that this or a similar arrangement will continue throughout the planning period.
- Prince George County: The County's 7,000 annual tons of waste collected at the convenience center is contracted to go to the Atlantic Waste Disposal Landfill in Sussex. It is anticipated that this capacity or other contracted private landfill capacity will continue to meet the County's needs barring unforeseen regulatory actions, demographic changes, and/or economic conditions (e.g. tipping fees).
- City of Petersburg: Based on the City's current estimated annual waste tonnage of 23,900 tons, its landfill should be operational at least until approximately 2010. After that date the City intends to contract with a waste disposal company to meet its needs.
- City of Colonial Heights: Barring unforeseen regulatory actions, demographic changes, and/or economic conditions (e.g. tipping fees), no anticipated needs until at least 2009, since the City has its waste disposal needs under contract with private landfill operators. After that date the City intends to contract with a waste disposal company to meet its needs.

The five (5) active C/D/D landfills (Qualla Road Demo Landfill is not included because it is currently not accepting material and may close) in the Region (623 C/D/D Landfill, Ashcake C/D/D Landfill, Cox's Darbytown Road Landfill, Taylor Road Landfill and Simons Hauling Debris Landfill) are all privately owned. It is anticipated that the available capacity at these landfills (several of which have submitted Part A Applications for expansion since the capacity figures reported in Table 2 were established) in conjunction with the C/D/D capacity available at other landfills such as the Charles City County Landfill will meet the Region's needs.

Additionally, the recently opened Hanover 301 yard waste composting facility and the planned Chesterfield yard waste facility will add to the available composting capacity. Some expansion to existing C/D/D landfills may occur over the life of this plan along with the possible opening of new C/D/D landfills within the Region if the need arises.