

MR. KAISER: In New York City we have a large enough area, and burn so much fuel of rather high sulfur content — heavy oil and coal, 2 to 3 percent sulfur — that sulfur dioxide in the atmosphere is a definite problem. We are said to be the nation's worst in that respect. And so legislation has gone in to reduce the sulfur content of these fuels. Now, it's hard to get that kind of fuel, and it will be at a higher price, of course. You notice from the analyses that refuse is extremely low in sulfur. In fact, I say without hesitation, that we have in refuse "the sweetest fuel this side of natural gas." That's true! So, if we would burn refuse and generate power there, we would need that much less of the higher-sulfur fuels, and thus, in a sense, help ourselves to a degree, only because of the tonnages involved, in reducing the content of SO₂ in the atmosphere. On the matter of fly ash, I think we can reduce our dustloadings as low as is done with the coal fire boilers. There is a move underway, therefore, to build a big refuse burning plant in the old Brooklyn Navy Yard. It would generate steam, send that steam to Con Edison, a big electric utility, which has distribution mains in the streets for district steam. Con Edison says that refuse could be used to generate steam for district heating — as, of course, is done in Europe. And, I think behind that question, is the thought that a marriage there could help the community. Instead of everybody going his own independent way, if we can work at these things together, again as they do abroad, it should help the overall picture.

MR. MICHAELS: Thank you. I would like to make one observation with respect to the use of refuse as a fuel. One of the things that I did when I was in Paris was to present a paper on incineration without waste heat utilization. I had occasion to determine the relative heat value available in refuse throughout the United States, and compare it to the heat value of the fuels currently used for power generation, or for all energy, as a matter of fact. As I recall, if all of the refuse were converted to power, to energy, we would provide somewhere on the order of 2 percent of the energy that the nation is currently using. If we took the energy that goes into automobiles and other modes of transportation using self-powered vehicles, this would provide somewhere on the order of 5 or 6 percent of the heat value required. So, even if all of our refuse were converted to energy, the best we could do is reduce the air pollution effect by this 5 or 6 percent. Which, of course, is the approach that we take; that is, that we nibble away at these problems; we don't attack them and solve them by changing our way of living overnight.

MR. KAISER: Because the quantities are so great, even that percentage is quite substantial.

MR. MICHAELS: Well, that's the point.

FROM AUDIENCE: Did you figure what percent of energy coal supplies at the present?

MR. MICHAELS: The total energy output in the United States was considered in this study. This includes, coal, fuel oil, natural gas and even the small amount of atomic energy that's currently used.

DR. HARDING: I think that the argument, if you want to use an argument for combined power generation and refuse disposal, is this. As was pointed out very efficiently by the luncheon speaker yesterday, cities, most municipalities, do not give adequate attention to incineration operations. In my opinion, electrical generation facilities are some of the best-run operations in the country. If we then have a combined refuse disposal and electrical generation system under the control of the utilities system, I would think that we would have much more efficient combustion and much better disposal of refuse.

MR. MICHAELS: That's a very sound observation; I agree completely.

MR. HALL: Is there any hope of early solution to incineration and reduction of scrap and junk automobiles? My particular interest is the elimination of open burning of vehicles in volumes up to 40 to 50,000 cars per year.

MR. KAISER: A study was made a few years ago with Public Health Service funds on the smokeless burning of automobile bodies in closed furnaces. Copies of the report are available from my office. You can also obtain a set of plans for a unit that would burn up to 28 auto bodies a day, if you send me \$5 in a check made out to New York University. We have sent out about 150 sets of those plans. There have not been that many units built, but the principles have been well demonstrated. There are automobile incinerators in this country that burn up to (and there is only one at this size which has been operating since 1959) 400 auto bodies in eight hours. It is in Brooklyn. At the moment, or at the last I heard, they were operating above 300 cars per 8 hours only for the reason that their baling press was able to handle only that many while making a small bale, which the present market calls for. When they made the larger bales they could burn at the 400-car rate. Burning in the open produces voluminous black smoke. By burning in a closed unit with an afterburner to burn up that smoke, you can have virtually a clear stack and a satisfactory operation.

MR. MICHAELS: Actually, incineration or burning of cars is not the only way of handling this waste product. Frank Bowerman has had some ex-

perience out on the West Coast with another device. Will you tell us about it, please?

MR. BOWERMAN: Yes. Interestingly enough, in the western part of the United States abandoned automobiles are disappearing. The reason is that a nonburning process has been developed. Two very large companies are working with this process. It's strictly a grinding process, but the unit is so large that the grinders can take an entire car body and knock it down to sizes of metal about as big as your fist. The radiator is removed for its copper value. The gas tank is removed, so that it won't explode. The engine is removed. The normal stripping required before you burn a body so that you get, the copper wire, upholstery, and similar things out, isn't necessary. Once the parts with a higher value are removed, the rest of the car body simply drops down into a monstrous grinder and comes out the other end as relatively small chunks of metal with the paint largely knocked off. The debris is easily separated out on a screen and sent to landfills. The hunks of metal are baled and are going overseas.

MR. MICHAELS: I think that the manufacturer of the third unit might be upset if he heard you refer to only two of them. There are several companies producing this machine.

MR. CHARLES KENAHAN*: Why are you so certain that metal salvage is not feasible or profitable? Because nobody has designed or devised a system for recovering metal from refuse or residue? At the same time you have great confidence in composting, which has failed after many attempts.

DR. HARDING: That's a good question. Tramp metal or regular scrap, either ferrous or nonferrous, if you are going to hand separate it, does have an outlet through the regular scrap brokers. In our attempt to abbreviate the comments, I left out much of that information. That can be handled. The thing that is the big headache is the tin cans; this is the metal that I am referring to which has the limited market, based on comments from scrap dealers, such as Sam Proler with Proler Steel in Houston, and other people with the secondary materials industries. They just seemed to think that cans do not have a future, unless you can develop export markets, or unless you are geographically close to the copper mines. As far as the composting goes, I think that the fertilizer people are looking for reasonable quality organics. And if the compost operation is a combined sewage disposal and composting refuse disposal facility, if properly operated it can provide a bulk organic reservoir for fertilizer.

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DR. A. VIEHOEVER*: What is the most effective method of disposal of plastic refuse? What is the most effective temperature without gumming? What are the prominent combustion products of polyethylene plastics?

MR. KAISER: That's an easy question. Polyethylene is a carbon-hydrogen compound. It's a beautiful fuel. Sure, it will get gummy if you've got a lot of it and you're trying to ignite it all at once. But in the refuse, as it normally comes where it is only one or two percent, it burns nicely. It will burn clean to carbon dioxide and to water vapor. It's the polyvinyl chloride which gives us hydrochloric acid on burning, or chlorides. PVC is used in the insulation of copper wire, where it is compounded with a number of metallo-organic compounds. On burning the wire, zinc chloride, mercuric chloride, aluminum chloride, titanium chloride, and so on are produced and probably some free hydrochloric acid. In refractory lined equipment, that isn't a problem. But, when the chlorides come in contact with metal equipment, such as fans, and cyclones, and boiler tubes, then we can have a problem. We are observing some trouble that way. The fortunate thing is that to date, the percentage present in refuse is very small. If more and more polyvinyl chlorides are produced, then my recommendation would be to take it out and bury it!

FROM AUDIENCE: What effect does it have on the public when these gases come out?

MR. KAISER: Again, we are saved by the dilution in the atmosphere. A scrubber, however, does take it out. We have burned copper wire alone in tonnage lots. The chlorides in the combustion gases are removed readily by means of a scrubber. They are soluble in water, and are taken out effectively by scrubbing.

ANONYMOUS: No incinerator today is meeting air pollution requirements.

MR. MICHAELS: I don't think that is a correct statement.

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THE NEED FOR LONG-RANGE PLANNING FOR A SOLID WASTE DISPOSAL PLAN

*Paul M. Reid **

IT IS A DISTINCT PLEASURE to meet in Washington on a *metropolitan* rather than a *national* basis. We don't often have the opportunity to meet for the purpose of facing common problems of metropolitan regions. It is gratifying that the Detroit region's experience in developing a long-range plan for solid waste disposal is called upon here to aid in the metropolitan Washington situation. I have responded to the call, not as an expert who knows all the answers but does not understand the questions, but rather as a practicing planner, persistently perplexed by the continuation of pertinent and sometimes impertinent questions regarding solid waste disposal. Let me at the outset confess our progressive sophistication in the use of the concept "solid waste." We started out in the Detroit region being concerned about disposal of *garbage and rubbish*. By the time we completed our plan, we called it *refuse disposal*. And now, we have adopted the terminology of the Public Health Service and the environmental health engineers — *solid waste disposal!*

In pursuit of rapport, let me check off quickly some helpful comparisons between metropolitan Washington and the Detroit region. In common with all such urban areas in the nation, both are beset by growth and expansion problems that not only override jurisdictional boundaries but also constantly tend to change the content, character and conformation of each unit of government involved. The Detroit region in 1966 contained an estimated population of 4,359,000; Metropolitan Washington had 2,600,000 people. Both have a significant background of metropolitan-regional planning, and both pioneered early in intergovernmental cooperation. In our area, the Supervisors Inter-County Committee dates back to 1954; in the Washington area, the Metropolitan Regional Conference was formed in 1957. The economies of the two areas differ, the Detroit region having a larger share of its employment in manufacturing and the Washington area having a heavier portion of its employment in government services. Both areas are still engaged in transportation studies of critical consequence. In the Detroit region, we have developed a regional recreational lands plan, while here in the Washington area, progress is being made on a regional open space plan. Both areas are deeply concerned in a metropolitan solution of

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the solid waste disposal issue. The metropolitan Washington area has successfully established a Council of Governments, while in the Detroit region the final phases of a six-county Council of Governments are now being undertaken.

Detroit Region's Approach to Solid Waste Disposal Plan

Six years ago, an *ad hoc* committee of supervisors from our then five member counties recommended that our regional planning agency place more emphasis on facility planning. Garbage and rubbish disposal stood high on their list of urgent priorities. Our Supervisors Inter-County Committee — which is made up of representatives of the six southeastern Michigan counties of which the Regional Planning Commission now embraces four — not only supported this recommendation, but offered to take a major part in the implementing of a regional refuse disposal plan. This background for our work is important. It reveals that local and county officials stressed the need for such a study and plan. It also insured that at the outset the Regional Planning Commission had intergovernmental support for the project. In contrast, our planning agency for some years had cited the need and urged that funds be provided for a regional transportation study, with emphasis on mass transportation and trucking, but got little response due to a lack of feeling of need among officials and government agencies. It took the Federal Aid Highway Act of 1962 to arouse local and county officials enough to launch this needed project.

As wisely provided in our planning agency's Rules of Procedure, once the need for a refuse disposal study was realized and support was forthcoming, we set up a large technical advisory committee of local, county and state officials, planners, engineers, and sanitation people to counsel and assist our staff in this project. These people were unhappily aware that the collection and disposal of solid waste in the Detroit region was on a makeshift basis. They recognized that steps of expediency only tempered the current anarchial situation and that chaos was the ultimate result unless an organized, area-wide approach were developed to handle the mounting problems of the efficient collection, transport, and sanitary disposal of solid waste. We all agreed that in our urban areas the key feature of the solid waste disposal problem is that it is intergovernmental. Hence, its resolution must be at the intergovernmental level. A common recognition of the extent and mutuality of the problem among officials of the beleaguered units of government is a primary step in setting up the apparatus for attacking the problem.

A project work program was developed and finally passed muster for a Section 701 planning assistance grant from the then Housing and Home

Finance Agency. The project was questioned at first by some HHFA officials as merely a "housekeeping" study. We anticipated, however, that the sanitary disposal of solid waste would require large areas of land, and that such land use would have to be related to other land uses, now on the ground or anticipated. Further, we saw the opportunity and potential for the reuse of sanitary landfill areas as park facilities, on a local, county or even regional basis. Thus, we finally convinced the HHFA people of the value and cogency of our project.

Our planning agency employed a professional engineer to direct the study and established him in the position of Deputy Director for Facility Planning. We were smart enough to recognize that as planners we had neither the technical skills nor the experience to handle the engineering aspects of the study and plan.

Most of the basic information was obtained from a mailed questionnaire, with some follow-up, of course, and from field surveys of existing and potential landfill and incinerator sites. The findings of this survey work fortified and dramatized the sense of need that had instigated the study.

Indicators of Need

The measure of need for an area-wide solid disposal plan and operation is highlighted, we found, by the size and scope of solid waste materials to be handled. The amount of garbage daily accumulated by the average family in a metropolitan area has been increasing, in spite of the pre-packaging of prepared foods and some increase in the use of home garbage grinders and incinerators. The raising of living standards tends to affect both the quantity and character of garbage. In regard to rubbish, we found in the Detroit area that communities with a higher economic level also tended to produce more rubbish per household. The average family in our area accumulated about 1.5 tons of garbage and rubbish per year. This was exclusive of demolition materials rubbish, resulting from the razing of houses and buildings in the course of residential and commercial redevelopment, and freeway construction, and also exclusive of major industrial rubbish. And the Detroit region has been growing at the rate of about 18,000 families per year! That means 27,000 *more tons* of solid waste per year!

Another vivid index of need that we uncovered was the alarming short-range capacity of existing disposal areas for solid waste. Out of 149 units of government responding to the question of length of future life of their landfill sites, this is what we discovered:

Forty-five answered: 3 months to 10 years. Of these: 30 had 2 years or less; 15 had 3 to 10 years; 15 said that they had sites for 10 or more years; 85 did not know how long their sites would last; 4 said their sites would last for an "indefinite" period. To put it bluntly, only 15 out of 149 governmental units reported they had landfill sites expected to last 10 years or more. For the overwhelming majority, their provisions for solid waste disposal were either dangerously short-range or nonexistent.

Our survey revealed that 82 of the 178 units of government (cities, villages and townships) that had collection systems were disposing of their solid wastes outside their own borders, within the territory of another unit of government. There is an ironic rationale in this situation. We *import* into our communities — largely from far-distant places — much of the material that produces our solid waste: food in tin cans, glass jars, and paper containers; liquids (*alcoholic and nonalcoholic, like milk!*) in glass bottles and paper containers; paper sacks, cardboard boxes and wooden containers resulting from the purchase of a variety of personal, household and clothing items. Then, each community in the urban complex seeks to *export* these refuse materials to another nearby community that has a handy landfill or convenient dump! The staff got to calling our regional map of origin and place of disposal of refuse the "worm map." The worm lines often ran from four communities to a fill site in one community. Or a single community might export its solid waste to three or four communities.

The range of prices that private collectors charged to units of government and to private households and business for collection and disposal of their solid waste was still another indication of a crying need for a region-wide system. Since our report and plan were published in early 1964, there has been a series of rises in the contract prices of private haulers in the Detroit region. Some of these collectors have gone out of business for want of disposal areas within economic distance of their customers. In most cases where the community took over from private contract collectors and instituted a public collection system, costs went up. Several individual local units of government took steps toward construction of their own incinerators, planning to build them with large enough capacity to accommodate the needs of adjacent communities — at a price that would help pay off the incinerator costs, of course.

Still another pressing need factor was consistently confirmed by our regional survey. The expanding rings and stub arms of urban growth into rural townships and undeveloped territory forced the location of disposal sites farther and farther from the more heavily populated central parts of the

region. Economicwise, this meant higher and higher haulage costs to both private contractors and municipal collection and disposal services. Traffic-wise, it meant heavy refuse trucks were wearing out minor and only semi-improved roads giving access to these rural disposal sites. The pattern of small disposal areas spread farther and farther out, due to expediency and the lack of an area-wide plan.

Results of Survey Study

Our staff and technical advisory committee developed some very definite convictions on the basis of our intensive study of existing conditions regarding refuse disposal:

- (1) Only a region-wide, long-range plan put into effective operation could provide a solution on the basis of sanitary disposal, economy, and rational land uses.
- (2) Disposal by a combined system of incinerators — located at strategic sites in the region — and sanitary landfill sites, also properly located, was the most effective method. We recognized that both incinerators and sanitary landfill sites were needed. Neither alone could serve the needs of the region. The ash residue from incinerators required disposal in sanitary landfills. Not all rubbish or refuse could be put through an incinerator, such as, bricks and stone from buildings. The cost of putting all garbage and burnable refuse through incinerators and depositing only the resulting ash in landfills was deemed too great. In addition, the use of sanitary landfill sites by the outlying low-density population and rural areas was entirely feasible, until they attained significant urban densities. Hence the five-county region was divided into a core area of population concentration and outlying sectors of sparse population, with the incinerators to handle a significant part of the burnable solid waste from the central core area of three of the five counties. In addition to two large sanitary landfill sites to serve the core area (one until 1980 and the other beyond that date), a number of small sanitary landfill sites were selected and spaced in the outlying areas. Both of the major landfill sites are worked-out gravel pit areas. The No. 1 site for the period to 1980 has pits of 90 feet in depth, dry, with ample adjacent cover.
- (3) We proposed that collection and transfer stations be constructed at selected sites in the core area, and that rail transport by means of vans on flat cars be utilized to get the solid waste and incinerator ash to the major landfill site. (In the course of our study, I visited and examined your transfer station here in the District, and was very favorably impressed.)

(4) We recommended that a metropolitan service agency be established to run the operation in the core urban area and that existing county agencies (road commissions and departments of public works) carry on the sanitary landfill services in the outlying areas.

(5) To back up our recommendations, we hired a well-established midwest firm of consulting engineers to develop basic data on costs and financing of the two alternative plans. One plan put a heavier emphasis on incineration, requiring some additional plants, the other depended on the existing plants and put more emphasis on sanitary landfill operations.

In line with our concern (as planners and conservers of natural resources) for the reuse of sanitary landfill areas, we employed a firm of landscape architects to develop a series of sketches to show how both large and small sanitary landfill areas might be developed in a variety of parks for different types of outdoor recreation. Since the publication of our report, a private recreational enterprise has taken steps to use solid waste to build ski runs!

Implementing the Plan

As soon as our report was off the press, we made a full-dress presentation to the Supervisors Inter-County Committee. On the basis of this report, that body at once urged its member counties to examine the report carefully and then begin to develop the necessary steps of implementation. In time, all five counties involved had special committees of their Boards of Supervisors at work on this matter.

The Metropolitan Fund, Incorporated, our voluntary regional research agency, was deeply concerned with implementing a regional refuse disposal plan, and underwrote \$12,000 for the production of a series of scale models of the plan, for use in informing citizens and local officials as to its need and workings. These models include an incinerator, a transfer and loading station, and a sanitary landfill operation, with a huge contour map of the region in the background of the display. The models have already been displayed in four of the five counties and at a local chapter meeting of the American Public Works Association and at the National League of Cities Conference in Detroit. They will be further utilized throughout the five-county area, at county seats and in the various cities and townships.

I have here with me copies of the brochure, explaining the waste disposal models, which are distributed when the models are displayed.

As a further step in implementation, the Metropolitan Fund — at the request of the Supervisors Inter-County Committee — undertook a legal

study of just how to set up a regional solid waste disposal authority. Under our new constitution, the establishment of such metropolitan service authorities is permitted, but enabling legislation by the state lawmakers is required for this end.

Our legislature last year, the first one under the new constitution and redistricting, passed a law to license and regulate garbage and refuse disposal. Several of the members of the advisory committee that assisted in our study are on the State committee set up by the State Health Department to write the standards and regulations for sanitary landfills.

At this stage in the long drawn-out and often frustrating implementation process, probably the major point to be made is that at least communities and officials are thinking on a county basis, instead of a local civil division basis. Some of our counties are willing to make an inter-county approach, but not all. But we are moving, and in the right direction! We have also had an assist from the Solid Waste Program administration in being requested to review applications for demonstration grants in our region.

What would we have done differently? Make no mistake, we would have done it again!

(1) But if we had to do it again, at the outset we would seek to put the project of developing the study and the plan under the aegis of a region-wide policy body. You have such a body; your Council of Governments is just the instrument. Our Supervisors Inter-County Committee was helpful but not equal to the tough task of effectuation. I expect our new Council of Governments will attain such a position.

(2) I would seek for the project the joint support of the Department of Housing and Urban Development and Department of Health, Education, and Welfare for the undertaking. Both Federal agencies have a stake in the development and effectuation of a region-wide solid waste disposal plan — one from the planning and land use standpoint, the other from the environmental health standpoint.

(3) Another urgent step to add would be the formation of a citizens' advisory committee to work parallel to the technical advisory committee. Elected officials need the push and the informed support of a significant body of citizens to achieve legislation and financing.

(4) And finally, I would add to the technical advisory committee — of engineers, environmental health people and planners — representatives of recreational agencies — regional, county and municipal. They should have

a part in the development of plans for the recreational reuse of sanitary landfill areas.

Conclusion

One of the unanticipated by-products of our study and work on a regional solid waste disposal plan has been a better understanding among urban planners, environmental health engineers, public health and public works officials. We had worked together before, sporadically, on little things here and there. In this case, it meant some intensive work on a big project with rather serious implications. It has created a better environment for professional cooperation in the interests of sound and healthful metropolitan development.

ADMINISTRATIVE PROBLEMS IN THE REGIONAL APPROACH TO SOLID WASTE MANAGEMENT

*Ross L. Clark **

THIS IS CENTENNIAL YEAR IN CANADA — the passing of one-hundred years having taken place since Confederation in 1867. Celebrations are underway in the many communities of our ten Provinces for the 20 million persons resident in the land, to focus attention on accomplishments, shortcomings and historical events which have brought the country to its present state of progress.

The various activities are permitting the citizens to reflect on traditions of the past, and to pause and assess the many problems — social, environmental, physical, and others — which must be met as we enter our second century.

The nation's birthday is highlighted by EXPO in Montreal, where the peoples of the world have recorded in steel, concrete and technical-social presentations, the great symbols of progress and the many wonders of the 20th century, to conform with the theme of the Fair — *Man and His World*.

Man's environment is constituted from the three traditional elements mentioned frequently in Greek writings and mythology, namely land, water and air. It would serve little purpose to explore the relative importance of each, for all play a significant part, and are essential to the existence of life. Indeed, it was the very presence of these ingredients which brought the early explorers to Lake Ontario, and provided them with plentiful agricultural and forest products, transportation and a healthy atmosphere.

Growth and development came quickly, and by 1849, when the city was incorporated, the population had reached a level of 9,000 persons. Today, — after the passing of 120 years — our citizens in the core City of Toronto and its environs number some 2.5 millions.

The Municipality of Metropolitan Toronto is a relative newcomer to the Canadian scene. However, in the brief period of 13 years, it has attracted widespread interest because of its governmental format, and in the con-

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siderable success achieved in overcoming many of the regional problems associated with the burgeoning growth of urban complexes.

Metropolitan Toronto is a federation of the central core City of Toronto and its surrounding suburbs, embracing 240 square miles and 1,850,000 people within its environs. The municipality was originally constituted in 1953 through enactment of Provincial legislation following a comprehensive study of the municipal problems in the Toronto area, by the Ontario Municipal Board — a body charged with responsibility to control capital expenditures by municipalities in Ontario, and which also exercises certain powers in planning, zoning, and other related matters.

The O.M.B. as it is more commonly known, received arguments pro and con by the city and each of its suburbs, on the suggested amalgamation of the entire area under one government, and the Hearing culminated in a recommendation that a new level of government be instituted in which the city, and its suburbs, would become partners for certain purposes.

Originally the Metropolitan Council was composed of 12 representatives from the city, and the mayors or reeves of the 12 suburbs. Mr. F. G. Gardiner, Q.C., L.L.D., was the original chairman, initially appointed by the Province for the first year, but subsequently selected for reappointment by the Council members. He retired in 1962, and his successor, Mr. William R. Allen, Q.C., was chosen by his colleagues from their ranks, and has been returned to office at each annual inaugural Council Meeting since that time.

The new Council was charged with defined responsibility for: uniform assessment; financing; water supply; sewage disposal; arterial roads; public transportation; welfare (certain functions); capital costs of education; administration of justice; housing; regional planning; and parks.

The member municipalities retained considerable autonomy and assumed responsibility for local services such as: distribution of water; operation of sewers; local streets and sidewalks; schools; fire protection; district parks and recreation; garbage collection and disposal; street cleaning; snow removal; libraries; local planning, etc.

In 1956, police, licensing, air pollution control and civil defense were integrated as regional activities.

Typical of the accomplishments of the Regional government in its initial years are: expansions of the water supply and pollution control facilities, with expenditures in excess of \$200,000,000 *; a rapidly developing system

of expressways and arterial roads, costing over \$365,000,000*, generally financed 50 percent by the Province; extension of the rapid transit subway system into the eastern and western suburbs at a cost in excess of \$200,000,000, partly financed by the Province; ever-increasing investment in schools (current requests are \$30 to \$50 million a year); similar expansions in parks, recreational and conservation lands and buildings, as well as housing for the aged, and low-rental accommodation.

During the period from 1954 to 1966, refuse disposal remained the responsibility of the member municipalities and the private and industrial concerns involved. Metropolitan Toronto did operate, through its Department of Works, sanitary landfills at a number of locations, partly to provide a needed service at a cost, but also with an end result in view — usually the transition of low-lying, wet or swampy areas into useful parks, although, in at least one case, selected fill was utilized to reduce the degree of slope on a high bank behind private houses, where land slippage appeared imminent.

These operations had no official legislative status, and required a great deal of cooperation from officials, both elected and appointed, in the municipalities involved. In 1965, the time arrived, as a report prepared some ten years earlier had predicted, when there simply was no more land available within 'Metro' where operating procedures of the past seemed possible.

Several of the member municipalities, with inadequate or no incinerator capacity, found themselves approaching a state of crisis. The refuse disposal problem was one of the major concerns of a Royal Commission † investigating the Metropolitan form of government which had been appointed in June 1963, as a result of agitation by officials and citizens over certain inequities which began to develop in the government system originally established. Chief among them was "representation by population" — some suburbs, whose population was 15,000 or less, had equal votes on 'Metro Council' with those well in excess of 200,000, and the suburban population, absorbing most of the Municipality's annual increment of over 50,000 people, had grown to approximately 1,000,000, with the core city's population remaining relatively static at some 675,000.

* This figure does not include expenditures made by member municipalities on local services.

† A Royal Commission may be appointed in Canada, either by the Federal or Provincial government, to explore whatever subject may be assigned under its terms of reference. Evidence is presented in the form of briefs and testimony, similar to a court of law. The government concerned may decide to follow the advice of a Royal Commission Report, or to accept only part, or none of its conclusions.

The Commission noted: "As locally operated sites in almost every municipality are quickly being filled, there is now an urgent need to locate new sites to provide disposal and incineration facilities on an area-wide basis." Reference was made to a brief presented by the Metropolitan Toronto and Regional Conservation Authority, which submitted that Metro alone should assume responsibility for all waste disposal. The Commission agreed, stating in its Recommendation 5 (vi): "The Metropolitan Corporation should assume responsibility for all waste disposal in the Metropolitan area." The Government of Ontario received the Commission Report in June, 1965.

During this same period, organizations such as the City Engineers Association of Ontario were endeavouring to impress government with the urgency of the waste disposal problem, not only in the Toronto area, but in the Province as a whole. Their advisory committee had prepared and published the following resolution in December, 1964, which is pertinent to this presentation:

"Whereas the disposal of refuse, both household and commercial/industrial is a matter of growing concern and economic cost to the municipalities of the Province.

"And whereas the cheapest method of disposal available at this time appears to be the sanitary landfill, the present economy of which is dependent on the availability and proximity of suitable sites, which in many areas are rapidly disappearing, or where available, their use may be objectionable to conservationists, or may become sources of pollution to water courses or to underground water supplies,

"And whereas, at present, control of landfilling is under several Legislative Acts including the Conservation Authorities Act, Section 20 (1) (e), the Public Health Act, Section 6 (43), the Ontario Water Resources Commission Act, Section 26 (3), and under the jurisdiction of several provincial departments and/or commissions,

"And whereas incineration, which appears to be the next most common method, also needs areas for disposal of residue and requires care to avoid excessive air pollution,

"And whereas disposal of volatile chemical and industrial wastes is not entirely acceptable either in conventional sanitary landfills or incinerators,

"Therefore be it Resolved that the City Engineers Association Advisory Committee to the Ontario Water Resources Commission requests the Commission to institute, or to investigate which provincial agency should institute studies into the long-range methods and economics thereof, for disposal of these types of wastes, as control would be preferable on a regional basis rather than on a limited municipal basis, and an effort should be made to centralize all regulation and control under the jurisdiction of one provincial agency."

A similar resolution was later forwarded by the Association directly to the Premier of Ontario.

In amendments to the Metropolitan Toronto Act introduced in 1966, the Ontario Legislature made significant changes in the Metropolitan Toronto format, creating 6 municipalities, into which the former 13 were absorbed. The land area remained essentially the same. The Council was expanded to 32 members plus the chairman to give more equal representa-

tion (20 from suburbs, 12 from city). Waste disposal became the responsibility of the Metropolitan Corporation after January 1, 1967, and all properties and equipment in use for disposal purposes as of March 31, 1966, were transferred without cost to the Corporation. The Act gave Metro authority to acquire land anywhere within the Metropolitan Toronto Planning Area (Metro area plus its contiguous municipalities is 720 square miles), subject to the approval of the municipality in which the land is located, or, if such approval is not forthcoming, subject to a hearing before the o.m.b. whose approval is necessary, and who may impose such restrictions, limitations and conditions respecting the acquisition or use of such land as may be deemed necessary or expedient. The Act further provided that no fee could be charged area municipalities or their agents for their utilization of the regional disposal facilities.

On announcement of the foregoing terms of reference, Metropolitan Toronto engaged the consulting engineering firm of James F. MacLaren Ltd. in association with Black and Veatch of Kansas City to make an exhaustive study of the waste disposal problem, including: (a) the volumes and types of wastes collected now and forecast to 1985; (b) the need to equalize collection costs for each of the six member municipalities as much as possible by establishment of disposal points or transfer stations within reasonable haulage distances; (c) recommendations relative to the use of landfill, incineration, or a combination thereof; (d) the study and selection of sites suitable for these purposes; (e) consideration of special wastes such as sewage sludge, flammable and volatile liquids, construction demolition wastes, bulky objects, trees, leaves, street sweepings and catchbasin wastes, etc.

Mr. L. W. Bremser of Black and Veatch, who addressed your Panel A yesterday afternoon, will have dealt with these study factors in his paper on "Regional Solid Waste Study."

The recent report of the consultants recommends a blending of sanitary landfill and incineration methods and Metropolitan Council has approved inclusion in its five-year capital works budget of the sum of \$31,800,000 to meet the needs of the area in waste disposal, for land acquisition, development of sites, and incinerator construction. At present hearings before the o.m.b. are underway relating to acquisition of a major site in a neighboring municipality. Planning and development of another site in one of the member municipalities is well advanced. These are expected to serve for upwards of ten years.

Another development affecting the picture involves establishment by the Province of a new branch of the Department of Public Health, and

the introduction of amendments to the Public Health Act, bringing control of all sanitary landfill operations in the Province under that Department. A copy of Bill 71, containing the pertinent sections of this proposed legislation, is attached as a supplement to this paper. The effect of the Bill is to prohibit operation of any new landfills unless the following procedures are undertaken: (a) engineering studies as to possible adverse affect on groundwater, surface flow, and the soil; (b) preparation of engineering plans and specifications showing the projected development of the site; and (c) obtaining approval and certification of the Department of Public Health.

Provision is included for inspection of active sites, and for correction of any unsatisfactory conditions at the operator's expense, subject to court action and a fine of not less than \$100, or more than \$2,000 if convicted. A completed site may not be utilized for any other purpose for a period of 25 years without the approval of the Minister of Public Health. Regulations prescribing conduct of operations will be published later, under authority of the Act.

It is noteworthy, that perhaps as a result of the resolution by the City Engineers Association, the Prime Minister established an Advisory Committee on Pollution Control, composed of the following: *Chairman*, Deputy Minister of Energy and Resources Management; Deputy Minister of Agriculture and Food; Deputy Minister of Public Health; Deputy Minister of Lands and Forests; Deputy Minister of Mines; and General Manager of Ontario Water Resources Commission.

A full-time Secretary has been appointed to record activities and the Committee functions and reports to the Minister of Energy and Resources Management under the following terms of reference: (1) to ensure coordination of the activities of the various Departments of the Government responsible for pollution control; (2) to foster and coordinate technical and economic research of pollution problems; (3) to formulate training programs; (4) to establish technical subcommittees for the purpose of studying specific pollution problems; and (5) to make recommendations.

In the Federal and Provincial Governments of Canada, Departments of government are placed under the supervision of a Minister who is an elected official and a member of the Cabinet. He reports on all Departmental matters to the House. Administration of the Departments is performed by a Deputy Minister, who is generally an expert in the particular field, appointed to the post, and the senior civil servant in the Department. Thus, it will be seen that a very high-ranking Committee is bringing its attention

to bear on the problems of coordination of activities in this vexing sphere of pollution control in Ontario, in which refuse disposal must be regarded as a major consideration.

Under the laws of Ontario, municipalities are the creatures of the Province, and are subject to extensive Provincial surveillance. Much of it is an aftermath of the depression in the '30's, when many municipalities across the globe declared bankruptcy. Today, no municipal council may commit its successors to future expenditure without the sanction of the O.M.B., which has an obligation to ensure that the debt structure of any municipality remains within the ability of its financial resources to repay. Additionally, because of subsidies from the Province in education, roads, welfare and others, controls in the form of audits, reports to the Department of Municipal Affairs, and a number of others are required. When the Provincial government passes legislation affecting municipalities, therefore, observance is required. Their only recourse is an expression of opinion at the polls at the next general election. In this manner, the opposition or unwillingness of some to cooperate in solving regional problems may be removed, while at the same time, consideration has to be given in planning works to eliminate or minimize the features which may have disturbed citizens, or caused their opposition.

The fact that, by simple passage of amendments to the Metropolitan Toronto Act, the Provincial legislature transferred all existing waste disposal facilities and equipment to metropolitan control, with no compensation necessary, other than assumption of any outstanding debt, thus giving effect to the Toronto regional approach, may not assist you here in the Washington area, under a different set of laws, even though circumstances and problems may be similar. You are far more familiar with your legislative procedures and problems than the writer, and perhaps only by comparison with our approach can the best combination of the two be made. However, irrespective of the advantages seemingly available in our legislation we have no lack of problems, both tangible and intangible. The protective clauses, written in our Act regarding use of lands in neighboring municipalities, enable aggrieved persons to call for an O.M.B. hearing, requiring presentation of all facts and aspects to justify the proposals. Irrespective of problems this is a healthy situation for in a democratic form of government, all sides have the right of expression, and we are not permitted to become so enthused over the obvious righteousness of our regional position that we are blinded to what our objectors may feel is the equal or superior righteousness of their case.

One thing stands out above all others. No matter how badly it is needed for the regional good, no sanitary landfill or refuse incinerator is welcomed with open arms as a prospective neighbor. Everybody agrees they are essential, as long as they are located someplace else. As administrators, we have to be conscious of this reaction and do everything possible to design our facilities to fit into their surroundings as pleasantly as possible, with house-keeping of the highest order, and prompt attention to, and correction of, any source of complaint. In this, conservation of the elements — our natural resources — air — water and soil — must be given paramount attention.

APPENDIX

WEATHER DATA	
Average rainfall per year	22.61"
Average snowfall per year	60.4"
Average yearly temperature	47.7° 71°
Average summer temperature (high)	80°
Average winter temperature	31° 19° (mean) during day high low

*The Municipality of
Metropolitan Toronto Act*

PART IV-A
Waste Disposal

Interpretation

73a.—(1) In this Part,

- (a) "area municipality" includes a local board;
- (b) "waste" includes ashes, garbage, refuse and domestic or industrial waste of any kind.

Waste disposal

(2) The Metropolitan Corporation may acquire and use land within the Metropolitan Toronto Planning Area and may erect, maintain and operate buildings, structures, machinery or equipment for the purposes of receiving, dumping and disposing of waste, and may contract with any person for such purposes, and may prohibit or regulate the dumping and disposing of waste or any class or classes thereof upon any such land, and may charge fees for the use of such property, which fees may vary in respect of different classes of waste, but no such fees shall be charged to any area municipality or its agent.

Approval re acquisition of land

(3) The power to acquire land under subsection 2 shall not be exercised without,

- (a) the approval of the municipality in which the land is situate, which approval may be granted upon such terms and conditions as may be agreed upon; or
- (b) failing such approval or agreement, the approval of the Municipal Board.

Approval of O.M.B.

(4) The Municipal Board, before giving its approval under clause b of subsection 3, shall hold a public hearing and shall give or cause to be given at least ten days notice of the hearing to the clerk of the municipality concerned and to such other persons in such manner as the Municipal Board may direct, and the Municipal Board, as a condition of giving any such approval, may by its order impose such restrictions, limitations and conditions respecting the acquisition or use of such land as to the Municipal Board may appear necessary or expedient.

Powers of area municipalities

(5) On and after the 1st day of January, 1967, no area municipality shall exercise any of its powers with respect to the matters provided for in subsection 2 without the consent of the Metropolitan Council.

Assumption of lands for waste disposal

(6) The Metropolitan Council shall, before the 1st day of January, 1967, pass by-laws, which shall be effective on the 1st day of January, 1967, assuming for the use of the Metropolitan Corporation any land, building, structure, machinery or equipment, including vehicles used primarily for the disposal of waste, that the Metropolitan Corporation may require for the purposes of subsection 2 that is vested on the 31st day of March, 1966, in any area municipality and is used on such date for the purposes set out in subsection 2 or that is acquired by any area municipality after the 31st day of March, 1966, and before the 1st day of January, 1967, for such use, and on the day any such by-law becomes effective the property designated therein vests in the Metropolitan Corporation.

Sale by area municipalities limited

(7) No area municipality, after the 31st day of March, 1966, and before the 1st day of January, 1967, shall without the consent of the Metropolitan Council sell, lease or otherwise dispose of or encumber any property mentioned in subsection 6.

Extension of time

(8) Notwithstanding subsection 6, a by-law for assuming any property mentioned in subsection 6, with the approval of the Municipal Board, may be passed after the 1st day of January, 1967, and in that case the by-law shall become effective on the date provided therein.

Liability of Metropolitan Corporation

(9) Where the Metropolitan Corporation assumes any property under subsection 6 or 8,

- (a) no compensation or damage shall be payable to the area municipality except as provided in this subsection;
- (b) the Metropolitan Corporation shall thereafter pay to the area municipality before the due date all amounts of principal and interest becoming due upon any outstanding debentures issued by the area municipality in respect of any property vested in the Metropolitan Corporation under subsection 6 or 8; and

- (c) notwithstanding any order of the Municipal Board or any debenture by-law passed pursuant thereto, all amounts of principal and interest becoming due thereafter with respect to any debentures theretofore issued by the Metropolitan Corporation in respect of any property vested in the Metropolitan Corporation under subsection 6 or 8 shall be repaid by levies against all the area municipalities.

Default

(10) If the Metropolitan Corporation fails to make any payment as required by clause b of subsection 9, the area municipality may charge the Metropolitan Corporation interest at the rate of one-half of 1 percent for each month or fraction thereof that the payment is overdue.

Settling of doubts

- (11) In the event of any doubt as to whether,
- (a) any outstanding debenture or portion thereof was issued in respect of any property assumed under subsection 6 or 8; or
 - (b) any vehicle was used primarily for the disposal of waste,
- the Municipal Board, upon application, may determine the matter, and its decision is final.

Local by-laws not applicable to Metropolitan Corporation operations R.S.O. 1960, c. 249

(12) No by-law of any municipality heretofore or hereafter passed pursuant to paragraph 112 of subsection 1 of section 379 of **The Municipal Act** or a predecessor thereof shall apply to the operations of the Metropolitan Corporation pursuant to subsection 2.

Existing contracts for disposal of waste

(13) Nothing in this Part shall affect any contract for the disposal of waste that is now existing between any person and any area municipality, but the Metropolitan Corporation and any such area municipality may enter into an agreement providing that the Metropolitan Corporation shall assume all or part of the liability created by such contract in respect of the disposal of waste. 1966, c. 96, s. 10.

PUBLIC ADMINISTRATION ASPECTS OF AREA-WIDE PLANNING

*Hugh Miels, Jr.**

THE SURGEON GENERAL as he announced this conference remarked that "The solid waste problems of the metropolitan Washington area will not be effectively dealt with until the District of Columbia, the states of Maryland and Virginia, and the cities and towns surrounding Washington join together in a cooperative effort . . ."

That may very well be the *understatement* of the decade. It will take more than a cooperative effort on the part of all the governments in the metropolitan area — including the Federal Government — to develop a solution to the problem of adequately protecting our urban environment from the hazards and pollutants that threaten to inundate us.

It will take no less than an unqualified political commitment on the part of all the local governments in the area to convince the state legislatures to pass the laws, raise and spend the money, and delegate (relinquish) the authority necessary to restore our physical environment.

It will take, moreover, imagination, skill, dedication and drive on the part of the bureaucrats involved to make the need for *action now* more meaningful to the political policymakers involved. So far our *local* public servants have demonstrated their great defensive skills only.

A cooperative effort may be enough to indulge in area-wide planning as an exercise — but planning for program implementation must be the product of an institutional arrangement capable of making political decisions to act affirmatively over the long haul.

Action oriented area-wide planning can only be initiated *after* the governments of the metropolitan area agree on the nature of the problem threatening their jurisdictions and that it has regional significance. Also they must generally agree on the means they need to employ to meet the threat and they must agree on the kind of urban condition they want to achieve in the process.

Only after these decisions have been made and the regional goals agreed

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upon can "public administration" take hold, and the administrators and technicians undertake area-wide planning for appropriate action programs.

The Critical Nature of the Problem

Secretary Gardner's Task Force on Environmental Health & Related Problems in its report *A Strategy for Livable Environment* released in June states: "Man lives in delicate equilibrium with the biosphere — on the precious Earth-crust, using and reusing the waters, drawing breath from the shallow sea of air. While these can cleanse themselves, they can do so only to a finite point. That point is being reached and passed in many places in the United States. It is not only necessary that we take preventive action, it is also urgent that we take steps to restore the quality of our environment."¹

The Task Force Report effectively communicates a great sense of urgency. It is a sense of urgency which needs to be communicated to the governments of this metropolitan area.

The Task Force Report documents at some length the extent to which our expanding and affluent urban populations are generating vast quantities of progressively more complex gaseous, liquid and solid waste products.

It is becoming increasingly apparent that the sources of these waste products are interrelated and that the whole approach to the protection of the public health and well-being must be undertaken on a broad and coordinated basis. The development of adequate environmental protection system for the Washington Metropolitan area will require that we direct our attention to the full range of existing hazards and that we recognize the interrelationships between solid, gaseous and liquid wastes.

If we are to restore and to protect and enhance our physical environment, a comprehensive approach to the problem is essential. The program we must construct must be concerned with not only solid waste disposal problems but air quality, water pollution, water quality and supply, chemical and pesticide hazard control and all other threats to our environment and our physical well-being.

Setting Program Goals

The Task Force Report *A Strategy for Livable Environment* recommends that HEW's purpose for environmental concern be: "To ensure that every American can thrive in an attractive, comfortable, convenient and healthy environment by:

- controlling pollution at its source,
- reducing hazards