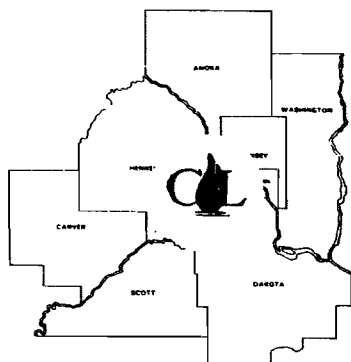


CITIZENS LEAGUE REPORT

No. 201

Metro Area Refuse Collection - Disposal

November 1966



Citizens League Report

Metropolitan Area

Refuse Collection - Disposal



CITIZENS LEAGUE
REPORT ON
METROPOLITAN AREA REFUSE COLLECTION AND DISPOSAL

Approved
Citizens League Board of Directors

November 23, 1966

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TO: Citizens League Board of Directors

FROM: Refuse Collection and Disposal Committee, John W. Pulver, Chairman

SUBJECT: Improvement of Refuse Collection and Disposal in the Twin Cities Metropolitan Area

INTRODUCTION

Almost forgotten in the myriad of urban problems facing the Twin Cities metropolitan area today is the question of how we get rid of our garbage (food wastes), waste paper, used tin cans, glass bottles, plastics, worn-out mattresses, rags, broken furniture, old refrigerators and stoves, burned out light bulbs and other such waste products--grouped generally under the blanket title of "refuse."

For most of us our concern ends when our weekly accumulation of refuse is taken away from our homes by the trash hauler. Most of us want to make sure our collection service is prompt, regular, complete and reasonable in cost. What happens to the refuse after it is taken away usually is of no concern to us. Most of us, in fact, probably have no idea where the refuse ends up. This also is the case with many municipal governments in the Twin Cities area today. Their main interest is making sure that the refuse is not disposed of within their own boundaries. Where it ends up is someone else's problem.

Plagued by this general disinterest and by a continuation of essentially the same type of refuse disposal -- open dumping -- which was used when this nation was predominantly a rural society, the Twin Cities area today has a refuse disposal problem somewhat analogous to a sleeping giant.

In the case of other functions associated with a growing metropolitan area, we have applied or are attempting to apply 20th century solutions. With few exceptions, this is not the case with refuse disposal. We must face the fact that the traditional open dump, usually burning, is totally incompatible with the idea of a modern, progressive metropolitan area.

We have been able to "get by" so far in this Twin Cities area by ignoring the problems of refuse disposal. Refuse haulers have been able to find dumping grounds in sparsely populated parts of the area. In recent years, though, residential developments have been creeping uncomfortably close to these dumps. It is not an unusual story to hear of the dump operator, upon receipt of complaints from nearby residents, to reply: "I was here before they were." It is becoming much more difficult to find available dumping grounds.

As far as we could determine, no one has developed an informed estimate of the annual amount of refuse produced in the Twin Cities area. Reports we have received from other parts of the nation indicate that 1,500 pounds per capita per year is a good rule of thumb. We now have a population of about 1.8 million. This is expected to reach 4 million by the end of this century. Using the figure of 1,500 pounds of refuse per capita, this means we are producing about 1,300,000 tons annually in this area today, and we will reach 3,000,000 tons annually by the year 2000 --

even assuming no increase in the per capita production of refuse. Information from technical experts in the field indicates the per capita production will increase 50 per cent by the year 2000. This would mean we would be producing 4,500,000 tons annually then. The above figures are difficult to interpret by themselves, other than to indicate that this is a lot of waste material. Based on these estimates, if we piled all our annual production of refuse in the Twin Cities area in 1966 in one place, say an area equivalent to the central business district of Minneapolis, about one square mile, we would fill such an area to a depth of five feet. That is only for one year, of course. By the year 2000, such an area could be filled annually to a depth of 16 feet.

This report attempts to bring to general public awareness the emerging problems of refuse disposal and suggests some ways to cope with these problems. The report also discusses the problems of refuse collection, which are quite serious in the two central cities, and makes some suggestions for improvement. Finally, this report attempts to bring together in one place the various pertinent data about refuse collection and disposal in the Twin Cities metropolitan area today to provide assistance to public officials and interested citizens.

SUMMARY OF RECOMMENDATIONS

RESIDENTIAL REFUSE COLLECTION

1. We find that refuse collection generally is being handled adequately at the municipal level in the Twin Cities metropolitan area. Although major improvements are needed to correct certain deficiencies (as we indicate in subsequent recommendations), we believe that municipal governments are able to make these improvements. We find no evidence to indicate that refuse collection could be handled better by any level of government with responsibility over a greater area than one municipality. We therefore recommend that full responsibility for refuse collection remain with the individual municipalities of the Twin Cities area.

2. Combined Collection of Garbage and Rubbish -- We recommend that the City Councils of Minneapolis and St. Paul provide for combined collection of garbage and rubbish. This means that all residential refuse would be collected together at the same time, from the same containers by the same collection service. The existing practice of separate collection would be discontinued.

3. Implementing Combined Collection in Minneapolis and Saint Paul -- We recommend that the City Councils of Minneapolis and St. Paul reject the method of combined collection by which private haulers would make their own arrangements with individual residents. (This method is common in many suburbs.)

Instead, we recommend that the City Councils of both cities provide a method of collection which will assure that all residents in a given area will be served exclusively by only one hauling truck and crew. This can be accomplished either by using municipal employees or private haulers. Because both municipal employees and private haulers now are involved in collection in both cities, we suggest that the cities be divided into a number of districts, perhaps along the lines of the various garbage collection routes now in existence. Municipal employees now collecting garbage only could be assigned certain routes. Private haulers could be awarded exclusive franchises by competitive bidding for collection in the other routes. After a few years each city could evaluate the system and determine whether it is better to have all private haulers, all city employees, or continue the joint operation.

4. Contract Collection versus "Wide Open" Collection in Suburbs -- We recommend that suburban municipalities in the Twin Cities area now served by the

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"wide open" refuse collection system, in which private haulers make their own arrangements with each dwelling, move to the contract system. Under the contract system a private collector is engaged exclusively by a municipality under formal contract agreements and definite specifications to collect refuse from all or a portion of the municipality. The contracts are usually awarded to the lowest responsible bidder.

5. Service Charges versus General Taxation -- We recommend that as a general principle municipalities of the Twin Cities area finance refuse collection by service charges against the benefited properties, rather than general taxation.

6. Frequency -- We recommend that under no circumstances (except perhaps in those weeks when there is a holiday) should any municipality permit regular refuse collection on anything less than a once-a-week basis.

REFUSE DISPOSAL

I. Sanitary Landfill

1. Dumping -- We recommend that open dumping, the most common type of refuse disposal in the Twin Cities area, be stopped. Localities in this area are becoming more and more reluctant, and in some cases refusing, to allow new dumping sites because so many are improperly operated. Unless dumping sites are cleaned up and operated only as sanitary landfills, this metropolitan area may soon find itself without an adequate supply of refuse disposal facilities. Sanitary landfill, when properly operated, is completely acceptable to health and public works authorities. Sanitary landfill today still is more economical than incineration in the Twin Cities area as a major means of refuse disposal.

To assure the proper operation of sanitary landfills, we recommend the enactment and enforcement of strict regulations on their operation. These regulations should generally be in line with recommendations of local, state and national health and public works authorities. This would mean, among other things, the following:

- (a) All refuse would be compacted and covered daily with at least six inches of earth.
- (b) Open burning would be prohibited.
- (c) Salvage operations would be discouraged, but, if allowed, would be conducted only in enclosed buildings.

(This recommendation is directed first to the local governments of the Twin Cities area, which now are fully responsible for regulation and enforcement of dumping sites. We are urging in this report, however, (see recommendation below) that the responsibility for refuse disposal be assigned by the Legislature to an areawide governmental agency. If the Legislature does not assign this responsibility to an areawide agency, the responsibility will revert back to the localities.)

2. Future Landfill Sites -- We recommend that a technical study of the long-term availability of land in the Twin Cities area for use as sanitary landfill be undertaken immediately. This study should earmark the specific areas which are best suited for landfill and the areas which should not be used. The study should include predictions as to how long the Twin Cities area can rely upon sanitary landfill as its major means of disposal and when this area should move on a large scale to some other method.

(We are recommending that the overall responsibility for refuse disposal be assigned by the Legislature to an areawide governmental agency. We believe that the necessary planning studies for this agency should be carried out by the Twin Cities Metropolitan Planning Commission, which would be instructed to make its reports directly to the areawide agency.)

We further recommend that new sanitary landfill sites be located only in areas identified in such technical studies as outlined above as suitable for sanitary landfill. This would mean, for example, that landfill sites would not be located where they would pose a threat to underground or surface water pollution, but they would be located where good material for cover would be available and near main thoroughfares, among other criteria. Also, the eventual use of the land proposed for a sanitary landfill should be determined, if possible, before any landfill operations begin. (This recommendation is directed to the governing bodies of townships, villages and cities, pending the assignment of refuse disposal to an areawide agency. In the absence of any technical study, the affected governmental body should act on applications for new sanitary landfills following the above-named principles as closely as possible.)

II. Incineration

Future Use -- We recommend that broader use of incineration as a means of refuse disposal in the Twin Cities area be seriously investigated. (We are recommending in this report that the responsibility for refuse disposal be assigned by the Legislature to an areawide agency. The question of broader use of incineration would then fall in the purview of such an agency. Should the Legislature not act, then this responsibility would remain with the municipalities, individually, or together where possible, through the Joint Powers Act.)

Outside "Back-Yard" Burning -- Although we did not compile extensive documentary information on back-yard burning, our committee generally felt that municipal governments of the Twin Cities area should consider prohibiting back-yard burning of rubbish. (The question of burning leaves is not faced here.)

III. Research in Other Methods

We recommend research on a metropolitan basis into new or improved methods of refuse disposal, including such possibilities as composting. (This recommendation would be carried out by the appropriate areawide agency assigned the function of refuse disposal as we recommend in this report.)

IV. Operation and Ownership of Refuse Disposal Facilities

We recommend that the powers of operation and ownership be given to whatever areawide agency the Legislature designates to be responsible for refuse disposal. This recommendation is not intended to preclude the right of private businesses or local governments to own and operate refuse disposal facilities but to guarantee that the areawide agency will have this power when needed.

V. Governmental Responsibility for Refuse Disposal

We recommend that the responsibilities for refuse disposal in the Twin Cities area be placed at the regional level. There are several alternatives for the type of regional organization or organizations which could be assigned the

responsibilities as outlined above. Based on our analysis of the alternatives we recommend as follows:

(a) Assign the responsibility to individual counties of the metropolitan area, as a minimum, or, preferably, to a metropolitan-wide agency. We would not recommend a single-purpose metropolitan district for refuse disposal, but the function could be assigned to a multi-service district, if created, or to an existing metropolitan agency, such as the Minneapolis-St. Paul Sanitary District if its boundaries are expanded and changes are made in the representation on its governing board to reflect the broader area.

(b) Provide that the Metropolitan Planning Commission (MPC) conduct the planning studies as required by whatever governmental agency is given the function of refuse disposal and make its reports directly to that agency.

RECOMMENDATIONS, FINDINGS AND CONCLUSIONS

RESIDENTIAL REFUSE COLLECTION

1. *We find that refuse collection generally is being handled adequately at the municipal level in the Twin Cities metropolitan area. Although major improvements are needed to correct certain deficiencies (as we indicate in subsequent recommendations), we believe that municipal governments are able to make these improvements. We find no evidence to indicate that refuse collection could be handled better by any level of government with responsibility over a greater area than one municipality. We therefore recommend that full responsibility for refuse collection remain with the individual municipalities of the Twin Cities area.*

Findings and Conclusions:

We have reviewed the different refuse collection practices in municipalities throughout the Twin Cities area. We found the most serious refuse collection problems in Minneapolis and Saint Paul, which we will discuss shortly. Generally, there appear to be few refuse collection problems in the suburbs, though some suburbs might be able to save their citizens some money by changing the method of collection. In any event, none of the problems we found involve situations which individual municipalities themselves cannot handle. In fact, it appears as if refuse collection is one function which even the smallest municipality is able to handle well. Ironically, some of the best examples of good refuse collection service (complete, regular pickup at low rates) have been in the smallest municipalities.

We find that the extent refuse collection is a formal function of local government varies considerably throughout the metropolitan area. A few local governments exercise no involvement whatsoever. Unlicensed private haulers make their own arrangements with residents for refuse collection. Many other local governments require licenses from all private haulers but still let each hauler make his own arrangements with residents for collection. Some local governments grant exclusive franchises to haulers by contract to collect refuse from every dwelling. In a very few localities municipal employees collect refuse. This is the greatest extent of municipal involvement. In the following pages we will recommend the degree to which municipal governments should assume responsibility for residential refuse collection.

2. *Combined Collection of Garbage and Rubbish* -- We recommend that the City Councils of Minneapolis and Saint Paul provide for combined collection of garbage and rubbish. This means that all residential refuse would be collected together at the same time, from the same containers by the same collection service. The existing practice of separate collection would be discontinued.

Findings and Conclusions:

We have reviewed the practice of separate collection of residential garbage and rubbish in Minneapolis and Saint Paul and compared this practice with collection practices in suburbs and in cities of comparable size throughout the nation. We find that Minneapolis, Saint Paul and South Saint Paul are the only municipalities in the Twin Cities metropolitan area with separate collection service. In these cities municipal employees collect wrapped garbage only from private dwellings. Citizens must make their own arrangements for collection and disposal of the balance of the refuse. Thus, different trucks, manned by different crews, may stop weekly at a private dwelling, with one pickup service handling the garbage and the other service handling the balance of the refuse. In all other municipalities of the metropolitan area, combined collection is in effect. All refuse, both garbage and rubbish, is collected at the same time by the same crew.

We find that whereas there may have been justifiable reasons at one time for maintaining a separate collection service for garbage, conditions have changed considerably over the years. We examined the advantages and disadvantages of separate collection and combined collection and conclude that on balance combined collection is clearly the better system. In general we find that separate collection is unnecessary, uneconomical, inconvenient, incomplete and unwanted. Specifically we find as follows:

(a) Garbage today makes up only about 11 per cent of the total amount of refuse produced in an average household. At one time this percentage was as high as 66 per cent. Two factors have contributed to this decline. First, the housewife today has less waste from food preparation than in previous years. Many more foods can be purchased already prepared, meaning that such things as vegetable greens or peelings no longer make up a major portion of household garbage. For example, in Minneapolis the amount of garbage collected by municipal employees has decreased from 53,609 tons in 1946 to 36,187 tons in 1965. Second, the total amount of refuse produced in the average household is increasing steadily, with the increase coming in the non-garbage portion, that is, paper, paper products, plastics, glass, cans, etc.

(b) More and more garbage is not even being placed in the household trash can. The Metro Poll of the Minneapolis Star revealed that about 15 per cent of the dwellings in the Twin Cities area are equipped with automatic sink disposals which grind garbage into sewers and about 17 per cent have indoor incinerators for garbage and rubbish.

(c) There is nothing inherent in the major methods of refuse disposal employed today in the Twin Cities area--landfill and incineration--which would require separation of garbage. At one time this was true, when garbage was fed to hogs on a large scale, for example. But this no longer is the case. Landfill sites can handle mixed refuse, and modern incinerators are built so that separation is unnecessary.

(d) Currently, the per dwelling cost of garbage collection in Minneapolis

is about \$8.44 a year, and in Saint Paul \$10.73 a year.* These costs are not assessed against each household but are financed by general taxation. (Saint Paul is moving to a service charge in mid-1967.) A resident of Minneapolis or Saint Paul who chooses also to have a regular collection service for the rest of his refuse pays roughly between \$17 and \$36 a year, depending upon the frequency, amount of refuse collected, and the private hauler involved. From everything we could learn, a suburban resident with combined collection pays no more, and many times less, than a central city resident pays for collection of all of the non-garbage portion of his refuse (rubbish). Combined collection rates in the suburbs generally range between \$13 and \$25 a year for once-a-week pickup. It would appear that a combined collection service would not cost significantly more than regular rubbish pickup in the central cities now. We were told by some rubbish haulers that they could pick up garbage, too, at no extra cost. In fact some of them said housewives ask them to pick up garbage now with the rubbish. It should be acknowledged that many citizens in the central cities do not have regular weekly pickup of their rubbish. They burn the paper and paper products and call a private hauler once a month or once every two months to pick up the cans and bottles. Or they may carry the non-burnables to a dump. Depending upon the frequency with which they call a private hauler, these citizens may have a lower out-of-pocket cost now than they would under a combined collection system. Yet if they have to call a private hauler at least once a month to pick up non-burnables, it is unlikely they are saving any money.

(e) Separate collection forces citizens to maintain two types of trash cans, one for garbage and one for rubbish. This means the housewife must make certain she does not place rubbish in the garbage can or garbage in the rubbish can. This is an unnecessary inconvenience. There need be no distinction on types of refuse to be included in each can.

(f) Several Minneapolis aldermen, in response to a questionnaire from the Citizens League, said their constituents complain about the two types of collection. Alderman Dan Cohen, 7th Ward: "I often receive complaints about the fact that it is necessary to maintain a separate private service for rubbish." Alderman Jack Newton, 10th Ward: "A small but significant number of my constituents have made inquiries, suggestions or complaints to the effect that they would like to see the city collect all trash and would be willing to pay an additional charge for this service." Alderman Mrs. Elsa Johnson, 8th Ward: "I have received many complaints from constituents objecting because there is no city-operated rubbish pickup service." Alderman Donald Risk, 1st Ward: "I have had a number of calls from people who feel rubbish and garbage should be made a single collection."

(g) As noted above in (d) many residents do not maintain a regular rubbish pickup service in Minneapolis and Saint Paul. This means that their total refuse collection is incomplete. Since the city picks up only garbage, they are encouraged to burn the rest of their rubbish. Tin cans and glass containers, many with food remains still in the, may sit for a month or more before they are collected, producing sanitation problems.

Regarding the possibility of combined collection an examination of the situations in each city is in order.

South Saint Paul -- It will be noted that the South Saint Paul situation

* See Page 30.

is a special one, involving 1,400 residents who pay \$1.05 a month for weekly garbage collection by city forces. The garbage is disposed of in the city's municipal garbage grinder. We have not made an in-depth study of this situation and therefore are not recommending one way or another. The payment by these residents finances the total cost of the operation, so, therefore, no additional tax moneys are involved. The service is optional.

Saint Paul -- Until the early 1950's garbage hauling in Saint Paul was done mainly by and for hog farmers. When the state law was passed requiring pre-cooking of garbage before it could be fed to hogs an abrupt decline occurred in hog feeding. It was then that the city of Saint Paul undertook a system of municipal collection of garbage only, in effect, taking over the routes which the hog farmers formerly had.

The city of Saint Paul has hired a consulting engineering firm to prepare detailed recommendations on how the city should move to a combined collection system. That firm's report is expected soon.

Currently, garbage and rubbish are hauled to the same location, the Pig's Eye Municipal Landfill. There would be no special problems facing Saint Paul other than the mechanics of who should provide the combined collection, a problem we deal with in our next recommendation.

Minneapolis -- Garbage collected by municipal employees in Minneapolis is now incinerated in the two city-owned incinerators. According to the Superintendent of Sanitation for the city, these incinerators are not constructed to handle mixed refuse, that is, both garbage and rubbish. The incinerators would have to be remodeled, or new incinerators would have to be built or the incinerators would have to be closed down and the mixed refuse carried to a sanitary landfill somewhere.

We believe it would not be sound public policy for the City Council to continue separate collection of garbage and rubbish in Minneapolis only because its two municipal incinerators are not equipped for mixed refuse. An urgent need exists for combined collection, and the city should move to combined collection as soon as possible. Combined collection could be started immediately if the city closed down the incinerators and used sanitary landfill. It is evident, though, that the long-term future of the incinerators must be determined. *We therefore recommend that the City Council of Minneapolis immediately undertake a detailed engineering study of what should be done with the two municipal incinerators: close them down and use landfill, remodel them for combined refuse or close them down and build new incinerators which can take combined refuse.* We do not know how long such a study would take, but if it would unduly delay implementation of combined collection, we believe it would be advisable to move to combined collection using sanitary landfill while a determination were made on the future of the incinerators.

3. *Implementing Combined Collection in Minneapolis and Saint Paul -- We recommend that the City Councils of Minneapolis and Saint Paul reject the method of combined collection by which private haulers would make their own arrangements with individual residents. (This method is common in many suburbs.)*

Instead, we recommend that the City Councils of both cities provide a method of collection which will assure that all residences in a given area will be served exclusively by only one hauling truck and crew. This can be accomplished either by using municipal employees or private haulers. Because both municipal employees and private haulers now are involved in

collection in both cities we suggest that the cities be divided into a number of districts, perhaps along the lines of the various garbage collection routes now in existence. Municipal employees now collecting garbage only could be assigned certain routes. Private haulers could be awarded exclusive franchises by competitive bidding for collection in the other routes. After a few years each city could evaluate the system and determine whether it is better to have all private haulers, all city employees or to continue the joint operation.

Findings and Conclusions:

We have reviewed the different methods of collection of refuse which now are in use in the Twin Cities area. There are essentially three different methods: (a) Private haulers making individual arrangements with each dwelling, known as the "wide open" system; (b) Municipal contract with a private hauler for a certain area; and (c) Municipal employees.

We have analyzed the pros and cons of the "wide open" system and conclude that on balance this system should not be adopted for combined collection in Minneapolis and Saint Paul. Its principal advantage is that private haulers, some 300 to 400 of them in the Twin Cities area, would have the opportunity to compete with each other for service at each residence. No hauler would be forced out of business because of an exclusive franchise. Also, a resident has some freedom of choice he would not otherwise have. These advantages, however, are outweighed by these disadvantages:

(a) The "wide open" system is the least economical of the three alternatives. Significant economies can be realized if a hauler can collect refuse from all dwellings in a given area. These economies are not possible when a number of haulers are picking up in the same block. More mileage is required. Fewer collections are possible. Collection rates in municipalities with contracts with private haulers are lower than in municipalities with the "wide open" system.

(b) The "wide open" system means that an unnecessary number of collection trucks will be present weekly on residential streets and alleys, causing nuisance and possibly safety problems.

(c) The "wide open" system does not guarantee that collection service will be provided at every dwelling. It is likely that in a central city such as Minneapolis or Saint Paul, with a higher percentage of low income families, a higher than usual proportion of the families would not contract with a private hauler for collection service. This would result in serious health problems if refuse were not carried away on a regular basis from every dwelling. Even if the city had an ordinance requiring every householder to contract for refuse collection there would undoubtedly be delays or difficulties in enforcement of the ordinance.

We analyzed whether it might be desirable for Minneapolis and Saint Paul to expand their municipal forces and equipment so as to provide combined collection exclusively by municipal employees. The chief advantage of this alternative is that, with refuse collection an exclusively municipal operation, a municipality has greater flexibility in determining what should or should not be collected. Its chief disadvantages are that many private haulers would lose their present customers and possibly be forced out of business and that the city would have to expand significantly its fleet of refuse collection trucks, possibly replace much of its present fleet

with different types of trucks and hire new employees which would be a substantial cost.

We analyzed whether the central cities should move to a method of collection exclusively by private haulers under contract, with each hauler awarded a specific route in competitive bidding. Advantages of this alternative include: (a) Contract collection may be more economical because of generally more competent management, better planning of operations and more effective use of labor and equipment. (b) Private haulers are given maximum opportunity to stay in business and retain their customers, consistent with the principle of exclusive collection in a given area. (c) The necessity for a comprehensive statement of the precise duties to be performed and responsibilities to be assumed, prevents the development of extravagant services and encourages a standard of equitable or required service to all properties. Disadvantages include: (a) There could be a tendency to sacrifice sanitation and public health considerations to profits. (b) City employees now assigned to garbage collection would be put out of work. (c) It is very difficult to develop comprehensive and fair specifications which will adequately control unforeseen occurrences.

Another possible alternative would be for a private hauler to be awarded collection rights for the entire city by contract. Nationwide there are certain firms which have resources to provide exclusive service in a large central city. We do not see a need for moving in this direction, since there are private haulers available in the Twin Cities area today to handle the job on a district basis. Further, with only one large hauler in the community, a risk exists that competition for bids would be very limited, with the result that the collection rate could be too high.

On balance, we believe that citizens of Minneapolis and Saint Paul can be provided with good refuse collection service either by municipal employees or by private haulers under contract in specific districts. We are unable to determine, at this time, which is the better. We therefore suggest that in moving to combined collection both cities be divided into districts, or routes, with present municipal employees assigned to some routes and private haulers assigned to other routes by competitive bidding. After a few years an evaluation can be made to see whether the cities should continue the system or move exclusively to municipal employees or private haulers.

4. Contract Collection versus "Wide Open" Collection in Suburbs -- We recommend that suburban municipalities in the Twin Cities area now served by the "wide open" refuse collection system, in which private haulers make their own arrangements with each dwelling, move to the contract system. Under the contract system a private collector is engaged exclusively by a municipality under formal agreements and definite specifications to collect refuse from all or a portion of the municipality. The contracts are usually awarded to the lowest responsible bidder.

Findings and Conclusions:

We discussed in detail in the recommendations dealing with Minneapolis and Saint Paul the advantages of the contract approach over the "wide open" system.

Another problem which exists in some of the more sparsely settled municipalities is the lack of any ordinances whatsoever on proper collection of refuse. We did not look into this problem in detail but were informed that this sometimes results in indiscriminate methods of disposal by individual citizens.

5. *Service Charges versus General Taxation -- We recommend that as a general principle municipalities of the Twin Cities area finance refuse collection by service charges against the benefited properties rather than by general taxation.*

Findings and Conclusions:

The question of financing refuse collection by service charges or general taxation arises in those communities which have contracts with private haulers for exclusive collection service or in those communities with municipal employees collecting refuse. The question does not arise where private haulers make their own arrangements with individual residents for collection service. In such cases, though, the financing arrangements are more similar to the service charge practice than the general taxation practice.

Minneapolis and Saint Paul both finance residential garbage collection service by general taxation. Saint Paul will discontinue the general taxation method on July 1, 1967, and move to a system of service charges against the benefited properties.

We believe that the service charge method is clearly preferable to general taxation. Under general taxation the costs of the collection service are imposed against all taxable property, whether or not served. In the case of garbage collection in Minneapolis, for example, commercial and industrial properties do not benefit yet must help pay for the service through general taxation.

This question may not be an issue in communities such as Wayzata and Hopkins, which currently finance refuse collection from general tax funds. In those communities the business and industrial firms also receive municipal collection service.

Aside from the issue of equitable distribution of the charges for collection service is the fact that refuse collection should be regarded as a utility service just as water, sewer, electricity, gas and telephone and be financed by service charges against the user.

Another advantage of the service charge approach is that differences in the amount of refuse at each home can be taken into account. That is, a certain service charge can be imposed for, say, two 30-gallon cans per week, with an extra charge imposed for extra cans. The production of refuse varies considerably depending upon the number of persons in a family, its income level and other factors.

6. *We recommend that under no circumstances (except perhaps in those weeks when there is a holiday) should any municipality permit regular refuse collection on anything less than a once-a-week basis.*

Findings and Conclusions:

As far as we could determine, the garbage collection service provided by the city of Minneapolis is the only collection service in the Twin Cities area on a less than once-a-week basis. Collection averages once every 8 to 11 days. City aldermen say they receive many complaints of infrequent collection. Letters to the editor in the newspapers mention complaints. Citizens are irritated when refuse is not collected on a regular basis. Generally they like to know what day to expect the pickup service. Then all refuse can be placed in the trash cans in advance. With irregular pickup the citizen never knows when to expect the collection. The Metro

Poll of the Minneapolis Star revealed that infrequent, irregular and undependable collection are the main reasons citizens give when dissatisfied with their collection service.

Lack of adequate financing, we were told, is the major reason for the less than weekly garbage pickup in Minneapolis. Saint Paul, which has a similar municipal collection of garbage, has a once-a-week pickup but the per-unit collection costs appear higher.

As an example of the need for regular weekly pickup of garbage in Minneapolis we were told by the largest private refuse hauler in the Twin Cities area -- who has several routes in Minneapolis to pick up rubbish -- that housewives often beg his collectors to pick up the garbage also because the Minneapolis garbage collection service is so infrequent.

For health reasons, also, regular weekly pickup of all refuse is desirable.

RECOMMENDATIONS, FINDINGS AND CONCLUSIONS

REFUSE DISPOSAL

I. Sanitary Landfill

1. *Dumping* -- We recommend that open dumping, the most common type of refuse disposal in the Twin Cities area, be stopped. Localities in this area are becoming more and more reluctant, and in some cases refusing, to allow new dumping sites because so many are improperly operated. Unless dumping sites are cleaned up and operated only as sanitary landfills, this metropolitan area soon may find itself without an adequate supply of refuse disposal facilities. Sanitary landfill, when properly operated, is completely acceptable to health and public works authorities. Sanitary landfill today still is more economical than incineration in the Twin Cities area as a major means of refuse disposal.

To assure the proper operation of sanitary landfills we recommend the enactment and enforcement of strict regulations on their operation. These regulations should generally be in line with recommendations of local, state and national health and public works authorities. This would mean, among other things, the following:

(a) All refuse would be compacted and covered daily with at least six inches of earth.

(b) Open burning would be prohibited.

(c) Salvage operations would be discouraged, but, if allowed, would be conducted only in enclosed buildings.

(This recommendation is directed first to the local governments of the Twin Cities area which now are fully responsible for regulation and enforcement of dumping sites. We are urging in this report, however, (see recommendation below) that the responsibility for refuse disposal be assigned by the Legislature to an areawide governmental agency. If the Legislature does not assign this responsibility to an areawide agency, the responsibility will revert back to the localities.)

Findings and Conclusions

We have inspected conditions of the principal dumping and sanitary landfill sites throughout the Twin Cities area. We have visited with public officials in townships, villages and cities where these sites are located, with owners and operators of these sites and with health authorities. We find that very few sites comply with recommendations of health and public works authorities that they be operated as sanitary landfills. Many sites present air pollution and nuisance problems because of open burning of rubbish and garbage. Others located near rivers or streams or swamps present threats to pure water supply because proper safeguards are not taken. At most disposal sites, refuse is not covered daily, with the result that nearby residents sometimes complain of rats and foul odors. These adverse effects often extend beyond the borders of the localities in which the sites are located. Specifically, we find as follows:

(a) Of a total of 20 major sites of which we are aware, only three can be regarded as sanitary landfills. Many of the dump sites are advertised as sanitary landfills, but operators fail to carry out the necessary steps.

(b) At least five dumps were closed this year in the Twin Cities metropolitan area because they were being improperly operated. They were in Plymouth, Maple Grove, Brooklyn Park, Lakeville Village and New Brighton. The village of New Brighton has had several problems with dump sites. One was closed in October, 1965, but still was burning a year later. Citizens near dump grounds frequently complain about their conditions. Following are some examples:

-- Homeowners in a new subdivision in Lakeville Township in Dakota County have pleaded, unsuccessfully, with their town board this year to halt burning at a dump located less than a mile away. The town board has taken the position that it is best to burn the refuse immediately, while it is still fresh.

-- Residents of Bloomington have complained about smoke from burning at the Minnesota Valley Sanitary Landfill, an open dump located just west of Savage, across the Minnesota River from Bloomington.

-- Earlier this year residents of Osseo complained about burning at two dumps in Maple Grove. When the Maple Grove Village Council ordered that dumping cease, the operators of both dumps closed them down in protest. One operator has since reopened.

-- Brooklyn Park closed its public dump this year after complaints from residents as far as five miles away.

-- In April, 1965, Harold J. Paulus, Associate Professor of Environmental health at the University of Minnesota, called for an end to the open dumping and burning at the Pig's Eye Dump owned by the City of Saint Paul. Burning has since been halted there.

-- In August of this year citizens of New Brighton and nearby Arden Hills were complaining to the New Brighton Village Council of rats in their villages from a New Brighton dump. This dump was later closed.

(c) Applicants for permits to operate sanitary landfills have been rebuffed on many occasions by municipal governments which had experienced

too many problems in the past with "sanitary landfills" which turned out to be open dumps. In some cases officials of these governments said they believed the applicants would, in fact, operate true sanitary landfills but the citizens would not stand for "another dump in the community". This has been the case particularly in Brooklyn Park and Maple Grove since dumps have been closed in those communities.

(d) The powers of policing and controlling conditions at dumping sites now rest almost exclusively with the local township board, village council or city council where the sites are located. Many of these localities have inadequate ordinances or none at all to control disposal sites as recommended by the Department of Health. Even where ordinances are adequate, the local government involved frequently represents a sparsely populated locality and cannot be adequately staffed to accomplish the necessary enforcement. In the larger, built-up localities where adequate staffing is available, there are very few dump or landfill sites because of a lack of available land.

(e) The State Department of Health, while possessing the power to establish regulations, does not appear to have enforcement power to require compliance with such regulations. Further, we were informed by an official of the Department that the Department of Health would prefer to remain in somewhat of an advisory capacity, establishing regulations for disposal facilities, but leaving enforcement to local governments.

(f) The only aspect of refuse disposal with any degree of state control today is a requirement in the Water Pollution Control Act that whenever a proposed disposal site is located where it might pose a threat to water pollution, a permit must be obtained from the Water Pollution Control Commission. We were informed by an official of the Water Pollution Control Commission that only one disposal site in the Twin Cities area has such a permit, and that site was closed this year. Several other sites probably should have such permits, we were told, but the Commission has not had the time nor resources to date to enforce the permit requirement.

It is our firm conclusion that this metropolitan area no longer can tolerate open dumping. Not only does it produce health problems and nuisances, but it has an adverse effect on any orderly solution to our long-term refuse disposal problem. This metropolitan area needs an adequate number of sanitary landfill disposal sites. As long as we have large amounts of open land near enough to the centers of population, sanitary landfill can, and should, be our major means of disposal. As the metropolitan area grows and as the amount of refuse per capita increases, we can expect that sanitary landfill probably cannot continue to be the major means of disposal. Then we will have to look to incineration or some other method to a far greater extent than we do today. But we should not be forced to look to other methods only because we cannot properly operate dumping sites as true sanitary landfills.

2.- *Future Landfill Sites* -- We recommend that a technical study of the long-term availability of land in the Twin Cities area for use as sanitary landfill be undertaken immediately. This study should earmark the specific areas which are best suited for landfill and the areas which should not be used. The study should include predictions as to how long the Twin Cities area can rely upon sanitary landfill as its major means of disposal and when this area should move on a large scale to some other method.

(We are recommending that the overall responsibility for refuse disposal be assigned by the Legislature to an areawide governmental agency. We believe that the necessary planning studies for this agency should be carried out by the Twin Cities Metropolitan Planning Commission, which should be instructed to make its reports directly to the areawide agency.)

We further recommend that new sanitary landfill sites be located only in areas identified in such technical studies as outlined above as suitable for sanitary landfill. This would mean, for example, that landfill sites would not be located where they would pose a threat to underground or surface water pollution, but they would be located where good material for cover would be available and near main thoroughfares, among other criteria. Also, the eventual use of the land proposed for a sanitary landfill should be determined, if possible, before any landfill operations begin. (This recommendation is directed to the governing bodies of townships, villages and cities, pending the assignment of refuse disposal to an areawide agency. In the absence of any technical study, the affected governmental body should act on applications for new sanitary landfills following the above-named principles as closely as possible.)

Findings and Conclusions:

Among the various technical studies which have been undertaken so far on urban problems of the Twin Cities area there has been a significant void on the subject of refuse disposal. Perhaps this has been because no real "crisis" has developed yet or perhaps it has been assumed that each individual municipality will be able to handle this function by itself. Even nationwide the subject of refuse disposal has taken a back seat to other urban problems such as transportation, water supply and sewage disposal. This attitude is changing, though, with a major reason for the change being the passage of new federal legislation authorizing grants-in-aid for refuse studies and construction of facilities. We find an urgent need for areawide studies on refuse disposal in the Twin Cities area. Specifically, we find this need for the following reasons:

(a) Many public officials we have talked with expressed the vague conviction that sooner or later we are going to run out of acceptable sites for dumping or landfill as the primary means of refuse disposal in the Twin Cities area, and then we will have to turn to incineration on a much greater scale or to some other method. We personally expect this will be true, also. As this metropolitan area more than doubles its population in the next 34 years it will be more than doubling its annual production of refuse at the same time. Thus, if we were to continue using dumping and landfill to the same extent as we are today, we would need more than twice as many sites as we have now. The problem is compounded by the fact that almost all of the sites in operation today are expected to be filled within 15 years, and many of them much earlier. Therefore, replacements for these would have to be found, plus additional sites because of the increasing population. Another factor is that the annual per capita production of refuse is increasing each year at a rate, according to one solid waste disposal engineer¹, of $\frac{1}{4}$ of a pound per capita per day. As the demand for sites increases, more outlying villages and townships are tightening their zoning requirements making it more difficult to find sites. Yet even these facts which have been brought to our attention are not sufficient to provide adequate guidance on what specific steps need to be taken and when. The needed research must be undertaken to determine the demand for

1. Personal Interview with Amos W. Kalkhoff, Solid Wastes Disposal Engineer, Consoer, Townsend and Associates, Chicago, Illinois.

disposal facilities in coming years as the population and refuse production increases, the availability of land for disposal facilities, considering such factors as location of residential development, proximity to lakes and streams, and principal highways, and the approximate time when landfill will become impractical as the major means of disposal because sites will be located too far away.

We are not equipped to estimate how many acres of land in the Twin Cities area are being filled today nor how many acres will be needed in the year 2000. This is a question for planners and engineers. It needs to take into account the different types of refuse disposal and their impact on the demand for land. How widespread is open backyard burning? What would be the impact if burning were discontinued? What about the extent of garbage grinding and the likelihood that its use will increase in the future? What about the possibilities of municipal incineration? Also to be considered in estimating the amount of land needed is the degree of compaction of refuse. The greater the degree to which refuse is compacted the less space it requires. Another factor is the availability of large holes, say from gravel pits, in the area, which might not take many acres, but which could be filled to many times the depth of other landfill sites.

Information we received from the Office for Local Government for the State of New York¹ indicates that for a community of 60,000 people, with an annual per capita production of 1,500 pounds, the amount of land needed annually if all refuse were placed in a sanitary landfill would be 13 acres filled to a depth of eight feet. Applying these figures to the Twin Cities area we find that today, assuming none of the refuse would be incinerated, we would need 390 acres annually filled to a depth of eight feet. In the year 2000, with no increase in per capita production of refuse, we would need 858 acres annually filled to a depth of eight feet. Or, projecting a 50 per cent increase in the per capita production, we would need 1,283 acres annually filled to a depth of eight feet in the Twin Cities area in the year 2000. This is the equivalent of about two square miles. If one-half of this needed volume were reduced by incineration, we would reduce the annual demand to one square mile to a depth of eight feet in the year 2000.

(b) Even on a short-range basis we find that many municipalities are experiencing difficulties in finding available disposal facilities, and each municipality by itself is searching for a new site. Officials in Anoka, Coon Rapids, North St. Paul, and South St. Paul, for example, all expect their municipal dumps to be closed within a year or so and do not know where within their own boundaries any new sites can be found. If they go outside their own boundaries, as at least Anoka and Coon Rapids have indicated they must, there is no assurance they will be accepted in some neighboring township or village.

(c) One of the best uses to which a landfill site can be put after it is filled is for park or recreation activity. Yet many landfills are being located with little or no thought to their future use. With proper planning landfills could be located in areas best suited for future park development. In any event, if possible, a landfill's future use should

1. "Municipal Refuse Collection and Disposal", Office for Local Government, State of New York, September, 1964, p. 25.

be decided upon before the operation of the landfill is begun. (It must be pointed out that controversies are certain to arise in selection of landfill sites aside from the issues of proper operation. For example, citizens have recently successfully opposed a landfill around a lake in northern Ramsey County because they believe the natural beauty of the area will be impaired. Overall planning for new landfill sites should be able to indicate which sites should be selected and which should be left in their natural state.)

(d) Some of the largest dumping sites in the Twin Cities area today--and some of the largest areas of open land which might be used for dumping--are located near major waterways, the Minnesota and Mississippi Rivers. In at least one case, a sanitary landfill along the Minnesota River, the owner is planning to reclaim lowlands for major industrial development. A clear determination of the long-term advisability of using these lowlands for sanitary landfill is needed. In many cases the location of a landfill near a waterway may not necessarily mean that a threat to pollution exists or if such a threat exists that it cannot be corrected.

It appears to us that the needed planning and studies should best be undertaken to cover the broadest possible portion of the Twin Cities metropolitan area. Planning disposal facilities for only one county or region in the metropolitan area would be inadequate. If federal funds are to be available for such planning and studies, an areawide approach seems mandatory. The city of St. Paul earlier this year applied to the U. S. Public Health Service for a grant to study refuse disposal in the eastern portion of the Twin Cities area. This grant was rejected at least in part because the application did not cover the entire metropolitan area.

II. Incineration

1. *Future Use--We recommend that broader use of incineration as a means of refuse disposal in the Twin Cities area be seriously investigated. (We are recommending in this report that the responsibility for refuse disposal be assigned by the Legislature to an areawide agency. The question of broader use of incineration would then fall in the purview of whatever governmental organization is given the responsibility of refuse disposal. Should the Legislature not act then this responsibility would remain with the municipalities, individuals, or together where possible, through the Joint Powers Act.)*

Findings and Conclusions:

We have reviewed the extent of incineration in the Twin Cities area today and discussed the possibilities of greater use with public officials, engineers and a commercial builder of incinerators. We find that incineration has the following advantages:

(a) Incineration substantially reduces the quantity of refuse to be disposed of, thereby lengthening the life of a sanitary landfill. Refuse usually is reduced to 10 to 25 per cent of its original volume.

(b) Incineration substantially improves the quality of the disposal product. Ashes from the incinerator makes a much more suitable fill material than regular refuse.

(c) Incinerators can be located in good proximity to the points of refuse collection, thereby improving the efficiency of collection by eliminating the necessity for long hauls to dump grounds or sanitary landfills.

The principal disadvantage of incineration is its higher cost in comparison with sanitary landfill. Generally, the cost of incinerating refuse is in the vicinity of \$4 a ton. (With Minneapolis incinerators the operating cost is \$4.75 a ton, but the city will allow private haulers to dump at the incinerator for \$4 a ton.) A private hauler will usually find, though, that he can dump his entire load--which can weigh as much as 5 or 6 tons--at an outlying landfill for no more than \$4 for the entire load. So far, the extra cost of traveling the greater distance is not so great so as to force him to choose incineration.

One factor which could make incineration more economical in the future is the possibility of harnessing the heat from an incinerator for producing electric power. This has not been possible so far, we were told by professional refuse disposal consultants, because the temperature in incinerators varies so much from time to time. This is due to the changing nature and amount of the refuse during a given period. Research is underway to see if these shortcomings can be overcome.

We were also informed by a sales representative of an incinerator company¹ that in some parts of the nation companies are building incinerators and leasing them to municipalities at a certain charge per ton of refuse, with the title to the incinerators being given to the municipalities after a period of time, say 20 years.

It also should be pointed out that the extra cost of incineration in actual cost to the average citizen is not excessive today. For example, St. Louis Park is charging its residents \$18 a year for collection and disposal of refuse. This finances the payment to a private hauler for contract collection and the cost of the incinerator, including operation, maintenance and debt service. Undoubtedly, one of the main reasons for St. Louis Park's low cost for both collection and incineration is its favorable contract with a private hauler. Of the \$18 per resident, \$10.68 goes to the private hauler. The balance finances the cost of the incinerator. The charge to St. Louis Park residents probably would be less if the private hauler used sanitary landfill instead of the city's municipal incinerator, but it should be pointed out that a charge of \$18 a year is a common charge throughout the metropolitan area, even where sanitary landfill is used. St. Louis Park's incinerator currently is operating at roughly 30 per cent capacity. Other communities could use the incinerator, if cost arrangements could be worked out.

Another disadvantage of incineration is that it contributes to air pollution if proper controls are not imposed. We were told by the Minneapolis air pollution control engineer that frequently the city's two municipal incinerators violate provisions of the city's air pollution control ordinance. The main problem occurs when the incinerators are fed old rubber tires to start hot fires to burn garbage. As far as we could determine modern-day incinerators can be built to meet the highest standards of air pollution.

2. *Outside "Backyard" Burning*--Although we did not compile extensive documentary information on backyard burning our committee generally felt that municipal governments of the Twin Cities area should consider prohibiting backyard burning of rubbish. (The question of burning leaves is not faced here.)

1. Personal Interview with Donald Plum, president, Plibrico Sales and Service Company, St. Paul.

Findings and Conclusions:

According to one of the latest publications of the American Public Works Association, outdoor burning is not suitable for present-day living in urban areas. The publication further states as follows: "Combustion temperatures and the amount of air needed for combustion cannot be regulated effectively or economically. The burners produce smoke, odors, and fly ash and are fire hazards to nearby buildings. This was dramatically demonstrated in the Los Angeles area in 1957 when backyard burning was limited to the hours of 4 p.m. to 7 p.m. Pictures taken just before 4 o'clock showed the area to be relatively free of smoke and haze. But pictures taken at one-minute intervals after the burning was started showed the area gradually blanketed with smoke; visibility was reduced from several miles to only a few hundred yards. Backyard incinerators have since been banned in the Los Angeles area.

"In fact, the practice of burning refuse outdoors is gradually being prohibited in most large cities. Outdoor incinerators cannot be manufactured nuisance-free at a price that interests householders and justified discontinuance of refuse collection and disposal systems.

"Backyard burning may be justified in sparsely settled areas where smoke and odors are quickly diluted and it is unlikely that the burners will cause any significant air pollution problems."¹

As far as we could determine, no more than three or four municipalities in the Twin Cities area totally prohibit backyard burning. This was the finding of a study of refuse collection and disposal practices in the Twin Cities area by Russell H. Susag, assistant professor of sanitary engineering, University of Minnesota.

Our survey of 20 of the largest cities in the nation revealed that 12 of them prohibit backyard burning of rubbish.

III. - Research in Other Methods

We recommend research on a metropolitan basis into new or improved methods of refuse disposal, including such possibilities as composting. (This recommendation would be carried out by the appropriate area wide agency assigned the function of refuse disposal as we recommend in this report.)

As far as we were able to determine there is no research or experimentation underway or contemplated in the Twin Cities metropolitan area on new methods of refuse disposal. Engineers close to the problems of refuse disposal told us they do not see any immediate technological breakthrough for a new method beyond sanitary landfill or incineration. Both sanitary landfill and incineration have certain limitations, though. Further, federal funds recently have been made available for experimentation in this field.

1. "Municipal Refuse Disposal", American Public Works Association, Public Administration Service, Chicago, Illinois, 1966, p. 200.

IV. Operation and Ownership of Refuse Disposal Facilities

We recommend that the powers of operation and ownership be given to whatever areawide agency the Legislature designates to be responsible for refuse disposal. This recommendation is not intended to preclude the right of private businesses or local governments to own and operate refuse disposal facilities but to guarantee that the areawide agency will have this power when needed.

Findings and Conclusions:

There are several factors which lead us to believe that within a few years ownership and operation of some disposal facilities will have to be on a regional basis. Specifically, these factors are as follows:

(a) Private operators may not choose to operate sanitary landfills to the extent they do today if, as we recommend, the requirements for operation of these facilities are tightened up.

(b) Individual municipalities which regard it as their responsibility to provide disposal facilities for their residents may find that it is impossible for them to "go it alone".

(c) As soon as the time arrives when landfill no longer can be the dominant method of disposal, some type of regional organization will be needed to provide, for example, for the construction and operation of an incinerator. Individual communities, especially suburbs, in all likelihood will not build incinerators on their own because of the high initial cost.

(d) Even though individual municipalities still are able to provide disposal facilities, in all probability they will find that it is more efficient and economical for these sites to be provided on a regional basis rather than the go-it-alone approach. The municipal incinerator in Saint Louis Park is a case in point. That community has had the financial resources and population to support an incinerator, yet it is far underutilized. Its efficiency would increase substantially if refuse from more communities were burned there.

Financing of the operation and ownership of refuse disposal facilities need not be done through any type of direct taxation or assessment. We see considerable merit in financing through the "use" basis, that is, charging so much per ton as refuse is brought to the disposal site. The charges imposed can be such to finance the operation and ownership so that no public tax moneys would be required.

V. Governmental Responsibility for Refuse Disposal

We recommend that the responsibilities for refuse disposal in the Twin Cities area be placed at the regional level. There are several alternatives for the type of regional organization or organizations which could be assigned the responsibilities as outlined above. Based on our analysis of the alternatives we recommend as follows:

(a) Assign the responsibility to individual counties of the metropolitan area, as a minimum, or, preferably, to a metropolitan-wide agency. We would not recommend a single-purpose metropolitan district

for refuse disposal, but the function could be assigned to a multi-service district if created, or to an existing metropolitan agency such as the Minneapolis-Saint Paul Sanitary District if its boundaries are expanded and changes are made in the representation on its governing board to reflect the broader area.

(b) Provide that the Metropolitan Planning Commission (MPC) conduct the planning studies as required by whatever government agency is given the function of refuse disposal and make its reports directly to that agency.

Findings and Conclusions:

We have outlined in our above recommendations our specific findings and conclusions on why the responsibility for refuse disposal should be removed from the municipalities and given to an area agency.

We have attempted to explore all possible governmental alternatives for assigning refuse disposal at the area level. We followed the principle that wherever possible we would seek to utilize existing governmental agencies rather than propose new ones. Following is a discussion of our findings and conclusions in connection with the various alternatives:

(a) Regional associations of municipalities, either under the Joint Powers Act or by legislative act

Under this alternative various municipalities in certain parts of the metropolitan area could form regional associations to regulate and license all disposal facilities in their region, to engage in planning and research for future needs, and when necessary own and operate disposal facilities.

Advantages of this approach include: (1) Existing governmental units would minimize any release of present authority they have for refuse disposal. (2) Certain municipalities with common problems could get together and not have to include others which might have different disposal problems. (3) Different types of solutions could be worked out in different parts of the metropolitan area by each regional association on its own. An advantage of using the Joint Powers Act would be that no legislation would be required whatsoever. The associations could be formed as soon as the municipalities agreed.

Disadvantages of this approach include: (1) Generally the problems of refuse disposal extend far beyond the borders of a group of municipalities with common problems. (2) Certain municipalities or townships vital to the success of such an association might not choose to participate. (3) It might be extremely difficult to obtain the necessary agreements throughout the metropolitan area to cover the entire area. A disadvantage of using the Joint Powers Act rather than obtaining special legislation for an association is that an association established under the Joint Powers Act is purely voluntary, and members may withdraw at any time.

(It should be pointed out that enabling legislation passed in 1957 by the State Legislature permits villages or cities of the second, third or fourth class in the Twin Cities area to establish sanitary disposal

authorities. Six northwest suburbs have established such an authority pursuant to this act but the authority has been dormant for the past six years.)

(b) Counties on their own or by Joint Powers Act

Counties in Minnesota today have no power whatsoever to engage in any function in connection with refuse disposal. Thus the State Legislature would have to give this power to the counties.

Advantages of this approach include: (1) No new governmental bodies would need to be established whatsoever, unless the counties were to form a refuse disposal association under the Joint Powers Act. (2) The responsibility of refuse disposal could be given to all counties in the state, thus obviating the need to adopt special legislation for the metropolitan area. (3) The county approach has been tried and is successful in certain other parts of the nation. (4) The knotty problems of area to be covered, financing, and representation would not have to be faced, since refuse disposal would become just another function within the framework of county government.

Disadvantages of this approach include: (1) Counties, by and large, have been regarded as agents of state government in Minnesota and have undertaken only to a limited extent functions of urban living in a metropolitan area such as ours. (2) To a large extent refuse disposal problems are inter-county in scope, with many counties unable to provide enough land for disposal for the entire population. (3) Counties today are not administratively structured to assume such a function and integrate it easily, because there is no department of county government readily suited to undertake the responsibility.

If counties were given the power of refuse disposal but found that they could not by themselves handle the problem because of inter-county implications, they could form an association under the Joint Powers Act. The advantages and disadvantages of utilizing the Joint Powers Act are similar to those listed under the first alternative above.

(c) A broadened Minneapolis-Saint Paul Sanitary District

The Minneapolis-Saint Paul Sanitary District today includes only the two central cities within its borders, plus a number of suburbs by contract. The Sanitary District has one responsibility: sewage disposal. It is likely that the 1967 Legislature will expand the boundaries of the Sanitary District to include all or a substantial portion of the seven-county metropolitan area.

Legislation would be required to give the Sanitary District the responsibility of refuse disposal.

Advantages of this approach include: (1) The responsibility for all waste disposal, both sewage and refuse, would rest with one governmental agency. (2) The Sanitary District now has to plan for certain aspects of refuse disposal, in that it must design its treatment plants to handle the increasing amount of garbage which comes into sewers from garbage grinders. (3) One aspect of sewage disposal, the incineration of the

sludge, might readily be integrated with incineration of refuse on a broad basis.

Disadvantages of this approach include: (1) There is no assurance that the boundaries of an expanded Sanitary District will be large enough to cover the area which should be included for refuse disposal. (2) The difficulty now in reaching agreement on an expanded Sanitary District, particularly its financing, might be compounded if another function such as refuse disposal were added. (3) The responsibilities of licensing and regulation of refuse disposal facilities would be alien to the basic outlook of the Sanitary District, which extends only to the ownership and operation of sewage disposal facilities.

(d) A metropolitan-wide special-purpose district, exclusively for refuse disposal

This alternative would require an act of the State Legislature, which could give the special-purpose district all the necessary powers in connection with refuse disposal.

Advantages of this approach include: (1) The possibilities of solving the refuse disposal problem properly would be maximized with the district responsible for this function only. (2) The boundaries and financing of the district could be suited to meet the specific needs of refuse disposal.

Disadvantages of this approach include: (1) This would mean a continuation of the trend to establish independent single-purpose metropolitan districts, each with its own tax powers and governing board but with little, if any, accountability to the voters. (2) The scope and magnitude of the refuse disposal problem has not been sufficiently determined to date to justify the creation of a metropolitan agency for this function only. (3) There would be no opportunity for coordination with other metropolitan functions, such as sewage disposal.

(e) A metropolitan multi-service district, of which refuse disposal would be one of its functions.

This alternative, too, would require an act of the State Legislature.

Advantages of this approach include: (1) Only one metropolitan agency is needed, which can be more accountable to voters than a multiplicity of them. (2) Coordination between metropolitan functions is maximized.

Perhaps the main disadvantage of pursuing this approach is the difficulty in ever reaching agreement on how to place the responsibility for all metropolitan functions and services in one governmental body.

In terms of the single-purpose district idea versus the multi-purpose district, there is another alternative, not discussed here, but which has been proposed of late by State Representative Robert O. Ashbach. This would involve a continuation of the single-purpose district idea, but placing overall policy control in a metropolitan council. The precise degree of jurisdiction of such a metropolitan council over the single-purpose districts is not clear.

(f) The Twin Cities Metropolitan Planning Commission (for the refuse disposal functions of planning only)

It is possible for the Metropolitan Planning Commission to be specifically instructed or asked to undertake the functions of planning in refuse disposal, with other agencies assigned the other functions.

Advantages of this approach include: (1) No legislative act need be required in connection with planning, because the MPC already has this power. (2) The vast amount of data dealing with the metropolitan area already in the hands of the MPC could be readily put to use.

Disadvantages of this approach include: (1) The planning would not be conducted by the same agency responsible for the licensing, regulation, ownership and operation of refuse disposal facilities. (2) The detailed studies needed in refuse disposal is somewhat different from the general long-range planning studies which have been published to date by the MPC.

It should be pointed out here that, in the event of the establishment of any multi-purpose district or metropolitan council which would coordinate the activities of single-purpose districts, the Metropolitan Planning Commission probably would be an integral part. Then, of course, planning by the MPC in refuse disposal would be closely related to the other refuse disposal functions.

(g) The Minnesota Department of Health (for the refuse disposal functions of regulation and enforcement only)

The State Legislature would have to specifically charge the Department of Health with responsibility of regulation and enforcement.

Advantages of this approach include: (1) Refuse disposal has many aspects of public health in connection with it. (2) The Department of Health has a ready-made administrative structure for licensing and regulation. (3) Special legislation would not be necessary for the metropolitan area alone.

Disadvantages of this approach include: (1) As mentioned earlier, the Department of Health wants only to establish regulations for refuse disposal, leaving enforcement to localities. (2) It has a difficult time obtaining legislative appropriations for enough inspectors for its present jurisdiction, let alone refuse disposal.

Consistent with our feeling that we should utilize as much as possible the existing structures of government in solving the problems of refuse disposal, we believe that the best alternative above, on balance, for the function of planning is the Metropolitan Planning Commission. There are sufficient areawide implications of refuse disposal today to indicate that an association of municipalities or counties could not do the planning as well as the MPC. Certainly, a single-purpose district or the Sanitary District with the combined functions of sewage and refuse disposal would not be able to handle the planning function as we have outlined earlier what this function should entail.

The MPC could be assigned to report specifically to the area agency responsible for refuse disposal. Thus, it would be tied in governmentally with the responsible body and would not be operating independently.

In terms of regulation and enforcement of refuse disposal facilities, it would appear that the most logical of the above alternatives is to give the responsibility to the Minnesota Department of Health. Regulation and enforcement would be a new function for all the other agencies suggested as alternatives. However, we have reservations about suggesting the Department of Health. Strict enforcement of sanitary landfills is one of the most important aspects of a properly run refuse disposal plan. Because of the Department's manpower limitations as a statewide agency, we believe that, realistically, the Department would not be able to provide the degree of enforcement we feel would be needed. Looking to our other alternatives, we believe the idea of an association of municipalities is the least appealing, because of its fragmented nature and because it is doubtful all areas would be included. The single-purpose district alternative also should be rejected. The refuse disposal problem in this area today demands action, but use of the single-purpose district, with all its shortcomings, should be a last resort. The most likely choices, we believe, would be to give the responsibility to county governments, a new multi-purpose district, if established, or an existing metropolitan agency such as the Minneapolis-Saint Paul Sanitary District.

Regarding ownership and operation of refuse disposal facilities, the extent of which we are not certain today, we believe the association of municipalities and single-purpose district approaches should be rejected on the same basis as for licensing and regulation. Again, the most likely choices are to assign responsibility to county government, a multi-purpose district, or an existing metropolitan agency such as the Sanitary District.

SCOPE OF THE REPORT

In the fall of 1965 the Citizens League Board of Directors approved establishment of a research committee to review the various methods of handling refuse collection and disposal throughout the metropolitan area to determine whether this function might be handled more effectively and economically.

COMMITTEE MEMBERSHIP

Eighteen persons participated in the deliberations of this committee. The committee was headed by John W. Pulver, chairman, an assistant cashier at Northwestern National Bank, and C. Blaine Harstad, vice-chairman, a Minneapolis lawyer.

Other committee members were Mrs. Ralph Bruce, Jr., William J. Corrick, Russell Cowles, F. Keith Emery, Samuel B. Fried, Larry Geisler, George C. Hite, Jerome N. Julius, Lawrence E. Kelley, W. D. Musolf, George W. Nelson, John Pegors, Charles Slocum, Russell H. Susag, J. D. White and Robert E. Willow. The committee was assisted by Paul A. Gilje, Citizens League Research Director.

COMMITTEE PROCEDURE

A total of 12 committee meetings were held between May 12, 1966, and October 24, 1966, of which five were three-hour evening meetings. The others were breakfast and luncheon meetings. In addition, the committee took an all-afternoon tour of refuse disposal facilities.

The committee received extensive cooperation from public officials, administrators and businessmen engaged in refuse collection and disposal. In all cases, the committee had no problem in obtaining information. Without such cooperation this report would not have been possible.

Persons who made appearances before the full committee included Eugene Avery, city engineer, Saint Paul; Thomas A. Thompson, city engineer, Minneapolis; Amos Kalkhoff, Consoer, Townsend and Associates, Chicago, Illinois, a consulting engineering firm for the City of Saint Paul on refuse collection and disposal; Ray Gauger, Gauger and Associates, Saint Paul, consulting firm working with Consoer, Townsend; Robert Roff, president of the Minneapolis Suburban Refuse Removal Association, an organization of private haulers; Ron Shobe, member of the board of directors of the Refuse Removal Association; Ed Drury, owner of the largest private refuse hauling firm in the Twin Cities area; Warren Anderson, member, Maple Grove Village Council; Robert Pulscher, city manager, Coon Rapids; Gordon Anderson, assistant city engineer, Hopkins; Ray Folland, city engineer, Saint Louis Park; Ed Shimek, village administrator, Brooklyn Park; Glen Northrup, planning director, Burnsville; E. A. Babcock, superintendent of sanitation, City of Minneapolis; Paul Johnson, chief of the section of general engineering, Division of Environmental Health, State Department of Health; Donald Plum, president, Plibrico Sales and Service Company, Saint Paul, a firm which sells incinerators, and Gerald T. Britton, marketing manager, Ziegler, Inc., Bloomington, a firm which sells sanitary landfill equipment.

In addition the Citizens League staff was in contact with at least 20 other public officials and administrators throughout the Twin Cities area. The staff also

obtained information from operators of dump grounds and sanitary landfills. The staff personally visited some 16 different dumping sites during one all-day tour.

Members of the Minneapolis City Council and suburban mayors were mailed questionnaires, asking their comments on the adequacy of refuse collection in their communities. Their replies were extremely helpful.

A survey of refuse collection and disposal practices in the Twin Cities area conducted this year by Russell H. Susag, a committee member, in connection with his work as assistant professor of sanitary engineering at the University of Minnesota, was extensively relied upon, as was other background information provided by the League of Minnesota Municipalities. The Citizens League staff conducted a survey of refuse collection and disposal practices in other large cities in the nation.

BACKGROUND—REFUSE COLLECTION

Collection of refuse in the Twin Cities metropolitan area is conducted by three major methods: (1) Municipal employees; (2) Municipal contract with a private hauler; and (3) Private haulers by individual arrangements with each dwelling. None of the three methods is the dominant practice in the area. Substantial numbers of people are served by each. In all cases the extent of official governmental involvement in the collection of refuse never goes beyond the local township, village or city government.

Within the above-mentioned ways are certain key differences on what types of refuse are collected. Collection of all material normally placed in the household trash can, that is, garbage (food wastes), paper, cans, bottles, plastics, etc., is known as combined collection. This type of collection is most prevalent. In certain cases garbage (food wastes) is collected by one service and the balance of the refuse, known as rubbish, is collected by another service. This is known as separate collection.

The frequency of collection also varies. The commonest residential collection frequency is once a week. In a few cases, twice-a-week service is provided. And in at least one case, the service is less than once a week.

Following is a discussion of the different methods of refuse collection now in use in the Twin Cities area:

1. Municipal Employees

Minneapolis, Saint Paul, Hopkins and South Saint Paul are the only municipalities in the Twin Cities area in which municipal employees and municipally owned trucks are used for collection of refuse. In Minneapolis, Saint Paul and South Saint Paul municipal employees collect garbage only. The balance of the refuse is disposed of as each individual citizen may decide, whether by a regular collection by a private hauler, back-yard burning of combustible rubbish or trips to a dump by the individual citizen. Only in Hopkins do municipal employees collect all refuse, both garbage and rubbish, in one combined pickup. A detailed discussion of the municipal operations follows.

Minneapolis - The City of Minneapolis employs approximately 108 men for collection of wrapped garbage from all dwellings in Minneapolis. This is exclusively a residential pickup service. Commercial and industrial firms must make their own arrangements with private haulers. The city has a total of 38 trucks, two of which are the side-loading packer type which compress the refuse into a smaller volume. The others are covered trucks without any packer mechanism.

Our surveys of other cities in the metropolitan area and throughout the nation reveal that the vast majority of collection service is provided with packer trucks, which have a much greater capacity than the non-packers. A non-packer truck in Minneapolis averaged $3\frac{1}{2}$ trips per day to the incinerator in 1965, with each load averaging 2,805 pounds. A packer truck can easily have a capacity of 10,000 pounds, meaning that only one trip would be necessary to the incinerator each day. The chief of the Sanitation Division for the City of Minneapolis said that the costs of a side-loading packer truck and a non-packer are about the same, about \$7,500. A rear-loading packer truck costs more. The most recent non-packer trucks were purchased in 1960. A provision for the purchase of four new packer trucks is included in the 1967 budget, he said. The city has had limited success with packer trucks, he said, because of the extra time required for the

packing mechanism to work after each loading. This extra time cuts down on the number of pickups which can be made. Also, the city's two incinerators are located conveniently for city collection crews so that long hauls to and from the incinerators are not required.

The pickup schedule averages between 9 and 11 calendar days for nine months and 8 calendar days for the summer months, according to the 1965 annual report of the Division of Sanitation of the City's Department of Public Works. The employees are divided into 28 three-man routes for nine months and 32 three-man routes for the three summer months. Each route has one driver and two pickup men. About 77 per cent of the pickups of garbage in Minneapolis can be made in the alley. One man will pick up the garbage on one side of an alley and the other man on the other side. The garbage is hauled to the city's two multi-ton incinerators.

The cost of the Minneapolis garbage collection and disposal system totaled \$1,022,988 in 1965, with \$838,096 the cost of collection and \$184,770 the cost of incineration. Approximately 121,180 families were served by this service. The cost was assumed by general taxation, but the cost, if prorated on a per family basis, would be about \$8.44 per year.

St. Paul - Like Minneapolis, the City of St. Paul has a system by which municipal employees collect wrapped garbage only. Individual residents must make their own arrangements for collection of the balance of the refuse by private haulers. The city picks up garbage at all private dwellings through four-plex apartments. Any apartments with more than four units must make their own arrangements. This is different from the practice in Minneapolis where the municipal forces collect from all dwellings and apartment buildings where such service is needed.

The city operates 20 garbage routes. On 15 of these routes, three men are used, a driver and two pickup men. The city uses all packer-type collection trucks for these routes. On the other five routes, a private hauler is paid by the city for his service and for the use of his truck, also a packer. In addition, one city employee, a pickup man, is assigned to each route. Thus on these five routes, only two men are assigned to a truck.

All garbage collected in St. Paul now is hauled to the city-operated Pig's Eye "Sanitary Landfill" Dump. The 1966 budget for the city includes \$525,908 for garbage collection and \$102,935 for operation of the Sanitary Landfill, for a total of \$628,843.

St. Paul, like Minneapolis, has financed its garbage collection and disposal service out of general taxation. The St. Paul City Council, facing serious revenue-raising problems for 1967, has voted to place both garbage collection and dumping at the landfill on a service charge basis next year. Until now, all private rubbish haulers in St. Paul have been allowed to dump free at the landfill. The service charges for collection and dumping have not yet been established. Service charges for collection probably will be determined in conjunction with a move to combined collection. The City of St. Paul has not yet decided to start a system of combined collection of refuse, but it has hired a consulting engineering firm to recommend specific steps for moving to combined collection. A preliminary report from that firm is expected soon.

An estimated 54,000 garbage cans are picked up weekly by the St. Paul municipal collection service. The collection service is on a regular seven-day schedule, so that residents can expect to have their garbage picked up weekly. It is not known how many families are covered by the 54,000 garbage cans, but the figure probably is slightly less than this. In Minneapolis an estimated 132,000 cans are picked up from approximately 121,180 families. Assuming such a relationship would exist in St. Paul, the St. Paul garbage collection service covers approximately 49,000 families.

Taking a total cost of collection and disposal in St. Paul at \$628,843, and dividing this by the number of families, we come up with an annual per-family cost of \$12.83 in St. Paul, as compared to \$8.44 in Minneapolis. Undoubtedly much of the cost of the St. Paul landfill cannot be directly attributable to residential service since private haulers use the landfill for commercial and industrial refuse. However, if only the cost figure for collection is used, \$525,908, the per family cost in St. Paul is \$10.73 per year. The reason for the higher per-family cost may be that St. Paul has weekly pickup while Minneapolis has 8-to-11-day pickup. Also, there is some evidence that Minneapolis garbage trucks pick up a greater volume of garbage each day. We were informed that usually the St. Paul garbage trucks—which make only one trip to the landfill daily—have loads of between 3,800 pounds and 7,000 pounds. An average Minneapolis garbage truck will pick up 10,000 pounds of garbage a day.

Hopkins - The City of Hopkins has the only complete collection and disposal system run entirely by municipal forces in the Twin Cities area. Two 3-man crews, each operating a 16-cubic-yard packer truck, pick up all refuse from all residences once a week and daily at all businesses. The refuse is disposed of in a municipal landfill located within the city limits. All industry located in the city also is allowed to use the landfill at no cost. The total cost to the city of Hopkins in 1965 was \$65,221, which was financed out of general taxation. There are approximately 3,000 homes in the city. It would not be accurate to divide the number of homes into the figure of \$65,221 to get a per-home cost, because of the business establishments also served. But it can be seen that if we did this, the figure would be \$21 per home, which is not abnormally high for a complete collection and disposal service. In all likelihood the per-home cost is more in the vicinity of about \$10 annually.

South St. Paul - Municipal garbage collection in South St. Paul is a special situation, serving only 1,400 residences which pay a service charge of \$1.05 per month for collection of garbage weekly by municipal forces. One 3-man crew of municipal employees is able to service these residences in about a four-day period each week. The garbage is taken to the South St. Paul municipal garbage grinder, the only municipal grinder in the Twin Cities area. The sewage at the South St. Paul treatment plant already is so intense because of the livestock packing houses that the addition of garbage to the sewers has virtually no effect on the problems of sewage treatment.

We were informed that the service charge of \$1.05 a month (\$12.60/year) finances the entire garbage collection operation so that no general taxation funds are required. The number of South St. Paul families utilizing the municipal collection service has been declining steadily, because a city ordinance requires installation of home garbage grinders in all new dwellings. At one time 4,000 families in South St. Paul were served by the municipal garbage collection service.

2. Municipal Contract with a Private Hauler

In about 11 communities in the Twin Cities area, municipal governments have entered into contracts with private haulers for the collection of refuse. A hauler with a contract is given the exclusive right to collect refuse in a community or portion of a community. The contract also will usually spell out how frequently collection will take place, how many cans are allowed, and what the city will pay the hauler for this service or what the hauler himself may charge if he does the billing. Usually, though, the community involved will bill the residents, either as part of general taxation, special assessment or as part of the regular municipal utility statement. Most of these contracts provide for residential pickup only. Commercial and industrial establishments usually must make their own arrangements. All of the contract arrangements of which we are aware involve the combined collection of garbage and rubbish.

The Morningside section of Edina and the village of Excelsior both have twice-weekly collection of refuse by municipal contract. For this service a resident pays \$24 a year. These are the only two communities we are aware of in the Twin Cities area with regular twice-weekly pickup instead of once-weekly pickup. In Wayzata, which pays a private hauler \$16,500 annually for contract collection, the collection schedule is once weekly, except twice weekly from mid-June to mid-October. The payment is from general taxation. Approximately 1,100 residences and 130 commercial establishments are covered by this service. The average annual cost per family or commercial establishment is about \$13.41.

Other examples of contract collection include Anoka, Circle Pines, Columbia Heights, Deephaven, Minnetonka Beach, Robbinsdale, St. Louis Park and White Bear Lake. A resident of Anoka pays \$1.25 a month for pickup of one 30-gallon can per week, with each additional can another 25 cents per month. A resident of Columbia Heights pays 75 cents a month for one 30-gallon can per week, with extra charges for more cans. St. Louis Park pays a specific amount to its hauler and then finances the operation with special assessments. A resident of St. Louis Park will pay \$18 a year for collection of three 30-gallon cans a week. This special assessment also finances the cost of the municipal incinerator. The private hauler is paid \$149,000 annually. In White Bear Lake the private hauler has an exclusive franchise and residents are billed directly by the private hauler. As far as we could determine, the above-named communities are the only ones in the Twin Cities area with exclusive contracts with private haulers. The possibility exists, though, that a few small municipalities of which we are unaware may have contracts for refuse collection.

3. Private Haulers by Individual Arrangements with Each Dwelling

In all communities of the metropolitan area not using municipal forces or private haulers by contract, refuse collection is accomplished by each individual householder making his own arrangements with a private hauler. The extent of involvement on the part of the municipal government is no greater than licensing of the private haulers' trucks, and even that is not done in many communities.

This type of collection takes place in large suburbs such as Bloomington, Richfield, Edina, Minnetonka, Golden Valley, Crystal, and, for rubbish but not garbage, in Minneapolis and St. Paul.

Several independent haulers, therefore, are competing for business within each community. It is not at all rare for four or five different haulers to have customers on the same block. Rates for weekly pickup of refuse by this method vary considerably. Information we received indicates the range extends at least from \$13 a year to \$36 a year for once-a-week pickup, depending upon the hauler, the location, and how much is collected. Rates may vary within a community. Some citizens of Minneapolis, for example, are paying haulers \$17 a year for once-a-week pickup of rubbish. Others are paying \$36 a year.

It is not known exactly how many private haulers serve the Twin Cities metropolitan area. The president of the Minneapolis Suburban Refuse Removal Association, an organization of private haulers, estimated that about 300 haulers operate in the Minneapolis area and another 150 in the St. Paul area. The great majority of them are small, one and two-truck operations. The largest private hauler in the Twin Cities area has a fleet of 38 trucks and 38,000 residential customers.

* * * * *

On the following two pages are tables showing refuse collection practices in the Twin Cities area and in several major cities throughout the nation.

Residential Refuse Collection Practices - Twin Cities Area

<u>City</u>	CC: Combined Collection of Garbage and Rubbish	ME: Municipal Employees
	SC: Separate Collection of Garbage and Rubbish	MC: Municipal Contract with a Private Hauler
		PH: Private Haulers by Individual Arrange- ments with Each Dwelling
Anoka	CC	MC
Arden Hills	CC	PH
Blaine	CC	PH
Bloomington	CC	PH
Brooklyn Center	CC	PH
Brooklyn Park	CC	PH
Burnsville	CC	PH
Circle Pines	CC	MC
Columbia Heights	CC	MC
Crystal	CC	PH
Deephaven	CC	MC
Edina	CC	PH-MC*
Excelsior	CC	MC
Falcon Heights	CC	PH
Fridley	CC	PH
Golden Valley	CC	PH
Hopkins	CC	ME
Inver Grove Heights	CC	PH
Lino Lakes	CC	PH
Mahtomedi	CC	PH
Maplewood	CC	PH
Mendota Heights	CC	PH
Minneapolis	SC	ME--garbage PH--rubbish
Minnetonka	CC	PH
Minnetonka Beach	CC	MC
New Brighton	CC	PH
New Hope	CC	PH
North St. Paul	CC	PH
Orono	CC	PH
Plymouth	CC	PH
Richfield	CC	PH
Robbinsdale	CC	MC
Roseville	CC	PH
St. Anthony	CC	PH
St. Louis Park	CC	MC
St. Paul	SC	ME--garbage PH--rubbish
St. Paul Park	CC	PH
Shoreview	CC	PH
South St. Paul	SC	ME--garbage PH--rubbish
West St. Paul	CC	PH
White Bear Lake	CC	MC

* The Morningside section of Edina is under municipal contract.

Residential Refuse Collection Practices - Other Cities

The Citizens League conducted a survey of some major cities throughout the nation to compare their residential refuse collection practices with those of Minneapolis and St. Paul. The results are summarized in the table below:

<u>City</u>	CC: Combined Collection of Garbage and Rubbish	ME: Municipal Employees
	SC: Separate Collection of Garbage and Rubbish	MC: Municipal Contract with a Private Hauler
		PH: Private Hauler by Individual Arrange- ments with Each Dwelling
Akron, Ohio	SC	ME--garbage PH--rubbish
Buffalo, N. Y.	CC	ME
Chicago, Ill.	CC	ME
Columbus, Ohio	CC	ME
Denver, Colo.	CC	ME
Detroit, Mich.	part CC, part SC	ME
Long Beach, Calif.	SC	ME
Milwaukee	CC	ME
Newark, N. J.	CC	ME
New York City	CC	ME
Oakland, Calif.	CC	MC
Oklahoma City, Okla.	CC	ME
Omaha, Neb.	CC	MC
Philadelphia, Pa.	SC	PH--Hog farmers for most garbage ME--Other garbage and rubbish
Portland, Ore.	CC	PH
St. Louis, Mo.	CC	ME
Seattle, Wash.	CC	MC
Toledo, Ohio	CC	ME
Tulsa, Okla.	CC	ME
Washington, D. C.	SC	ME
Wichita, Kansas	CC	ME and PH

BACKGROUND--REFUSE DISPOSAL

I. Dumping and Sanitary Landfill

Dumping is the commonest method for disposal of refuse in the Twin Cities metropolitan area. Dump grounds have been located in almost all directions from the main centers of population. A dump ground, of course, has only a limited life as a disposal facility. When filled, a new site must be found. The life of a dump ground in the metropolitan area is even more limited. The population is increasing rapidly, which means more refuse will be disposed of annually. Secondly, the life of a dump ground in the metropolitan area is limited by urbanization which tends to press out to the formerly rural areas where many of the dumps are located. When this happens dump operators must look further out for land.

An example of this phenomenon is in southern Hennepin County. There is no public dump today located between Minneapolis (which has no public dumps itself) and the Minnesota River. The last dump, at 76th and France Avenue on the Edina-Bloomington border was closed in 1964. Operators of this dump moved across the Minnesota River into Scott County and opened a dump there.

As far as we could determine there is no central record of all dump sites in the Twin Cities metropolitan area today. By a process of contacting municipal officials, refuse haulers and dump operators we were able to ascertain the existence of some 20 sites. These sites either accept all types of refuse or all types of refuse except garbage. We did not concern ourselves with so-called "dry rubbish" dumps, which are exclusively for such material as building debris. In all likelihood there are many other refuse dumps in the Twin Cities area of which we are not aware. But we are fairly confident that the list we have obtained includes those which serve the major population centers.

The number of dumps which are truly "public" and admit anyone, is much smaller. In fact, at least half impose certain restrictions on who may dump. In most cases these restrictions apply to residency. A dump may be operated exclusively for the residences of one locality. Another form of restriction is imposed at one or two dumps which are owned by private haulers. These dumps either are for the exclusive use of the private haulers involved or they may allow only a very limited use by others.

There is no pattern of public ownership or private ownership of dumps. Some municipal governments have assumed the responsibility for providing a site for their citizens while many more municipal governments have assumed no responsibility at all but have left the matter of finding a dump up to the various private haulers.

The conditions at the various dumps also vary widely. The term "dump" usually means of method of disposal where few, if any, controls are imposed or enforced to regulate health hazards or nuisances such as smoke, odors, rodents, flies, blowing paper and other blowing debris. A properly-operated dump is known as a "sanitary landfill." This term is correctly applied only to a dump in which the refuse is compacted to the smallest possible volume (generally by use of a bulldozer) and covered entirely each day with earth or some other fill. Many dump sites are advertised as sanitary landfills, but compaction is rare and refuse may be exposed in the open for many days before it is covered.

We could find three sites which can be called true sanitary landfills:

Freeway Landfill, just east of Interstate 35W and north of 122nd St. in Burnsville; Hopkins Landfill, in the southwest part of Hopkins, and Boyer Landfill in Medina Village about $1\frac{1}{4}$ mile southeast of Loretto.

Following is a brief description of the various dump sites of which we are aware in the Twin Cities metropolitan area:

1. 170th Street, Salvage, Lakeville Township, Dakota County, near Hwy. 65. Privately-owned. Open burning allowed. Town Board officials have received several complaints this year from residents of the Forest Hills housing development about $\frac{1}{4}$ a mile away. No estimate available on acreage or future life.

2. Freeway Landfill, Burnsville, Dakota County, along Hwy. 35W just north of 122nd St. Privately-owned. Burning prohibited. Refuse is compacted and covered daily. No salvaging allowed. Owner is operating a true sanitary landfill, hopes to sell land for industrial development when landfill operation is complete. Much of the material used to cover the refuse is fly ash from the nearby Black Dog power plant of Northern States Power Company. Owner is filling 33-acre site at a rate of 4-5 acres a year. Another 75 acres adjacent also may be used for sanitary landfill. Dike is under construction to protect landfill from flooding on the Minnesota River.

3. Kraemer's Pay Dump, Burnsville, Dakota County, about $\frac{1}{2}$ mile north of Hwy. 13 and 1 mile west of Hwy. 35W. Privately-owned. Burning prohibited. Location is in Minnesota River bottoms. Salvaging permitted. Present 40 acre site expected to be filled in a very few years. Owner has 600 acres nearby, much of which is used for sand and gravel operation. Future possibilities of expansion into these 600 acres are uncertain.

4. Minnesota Valley Dump, Glendale Township, Scott County, just west of Savage along Hwy. 13. Privately-owned. Open burning allowed. Very large salvage operation in process. Present 40-acre site has been in operation about three years and is about one-third full. Owner says that residents across the Minnesota River in Bloomington have complained about burning, so now burning takes place only when the wind is from the north so that smoke won't blow into Bloomington.

5. Hopkins Landfill, city of Hopkins, Hennepin County. Publicly-owned. Operated as true sanitary landfill, with burning prohibited, no salvaging allowed, and all refuse covered daily. The city of Hopkins owns and operates the 37-acre site exclusively for residents of Hopkins. It is expected to be sufficient for Hopkins residents for another 15-20 years.

6. Excelsior Dump, Excelsior Village, Hennepin County, along Hwy. 19, across from the sewage treatment plant. Privately-owned. Open burning allowed. Owner has large salvage operation. Owner expects that six-acre site will be closed next year because no more room is available.

7. Eisinger's Dump, Orono Village, Hennepin County just south of Hwy. 12 west of Long Lake. Privately-owned. Salvage operation extensive. Acreage and future possibilities unknown.

8. Boyer Landfill, Medina Village, Hennepin County, $1\frac{1}{4}$ miles southeast of Loretto. Privately-owned. Burning prohibited. Operated as true sanitary landfill, with all refuse covered daily. Owner's large, modern home overlooks the landfill. Operated primarily for owner's 24-truck garbage service. About 140 acres are available, and only a very small area has been filled since the landfill was

started in 1963.

9. Osseo-Maple Grove Pay Dump, Maple Grove Village, Hennepin County, about 1 mile west of Osseo. Privately-owned. Open burning was permitted until complaints early this year forced Village Council to prohibit burning. Owner has extensive salvage operation. Life of five-acre site is uncertain.

10. Anoka Municipal Dump, Coon Rapids, Anoka County, on Anoka-Coon Rapids border. Publicly-owned. Burning prohibited. Dump is operated exclusively for residents of Anoka, Coon Rapids and Champlin. Site is almost filled. Both Anoka and Coon Rapids now are looking for new dump sites on their own.

11. Johnson's Dump, Grow Township, Anoka County. Privately-owned. Open burning allowed.

12. Gallagher's Landfill, 91st Avenue NE, and Central Avenue, Blaine Village, Anoka County (across from the Blaine Village Hall.) Privately-owned. Burning prohibited. Owner expects 30-acre site should be sufficient for another 3 or 4 years.

13. Bellaire Sanitation Dump, Grant Township, Washington County, near Old Stillwater Road, about 1 mile east of Willernie. Privately-owned. Burning prohibited. Acreage and future life unknown.

14. Leonard Johnson Dump, Grant Township, Washington County, near Old Stillwater Road. Privately-owned. Open burning allowed. Acreage and future life unknown.

15. North St. Paul City Dump, city of North St. Paul, Ramsey County (about four blocks north of Hwy. 36). Publicly-owned. Dump is filling in rapidly and is expected to be closed in a year.

16. Maplewood Village Dump, Maplewood Village, Ramsey County, just west of Hwy. 100. Publicly-owned. Open-burning allowed. Life of six-acre site is very limited.

17. Fish Hatchery Landfill, just off Warner Road, St. Paul, Ramsey County. Publicly-owned. Burning prohibited. Future life of seven-acre site is limited.

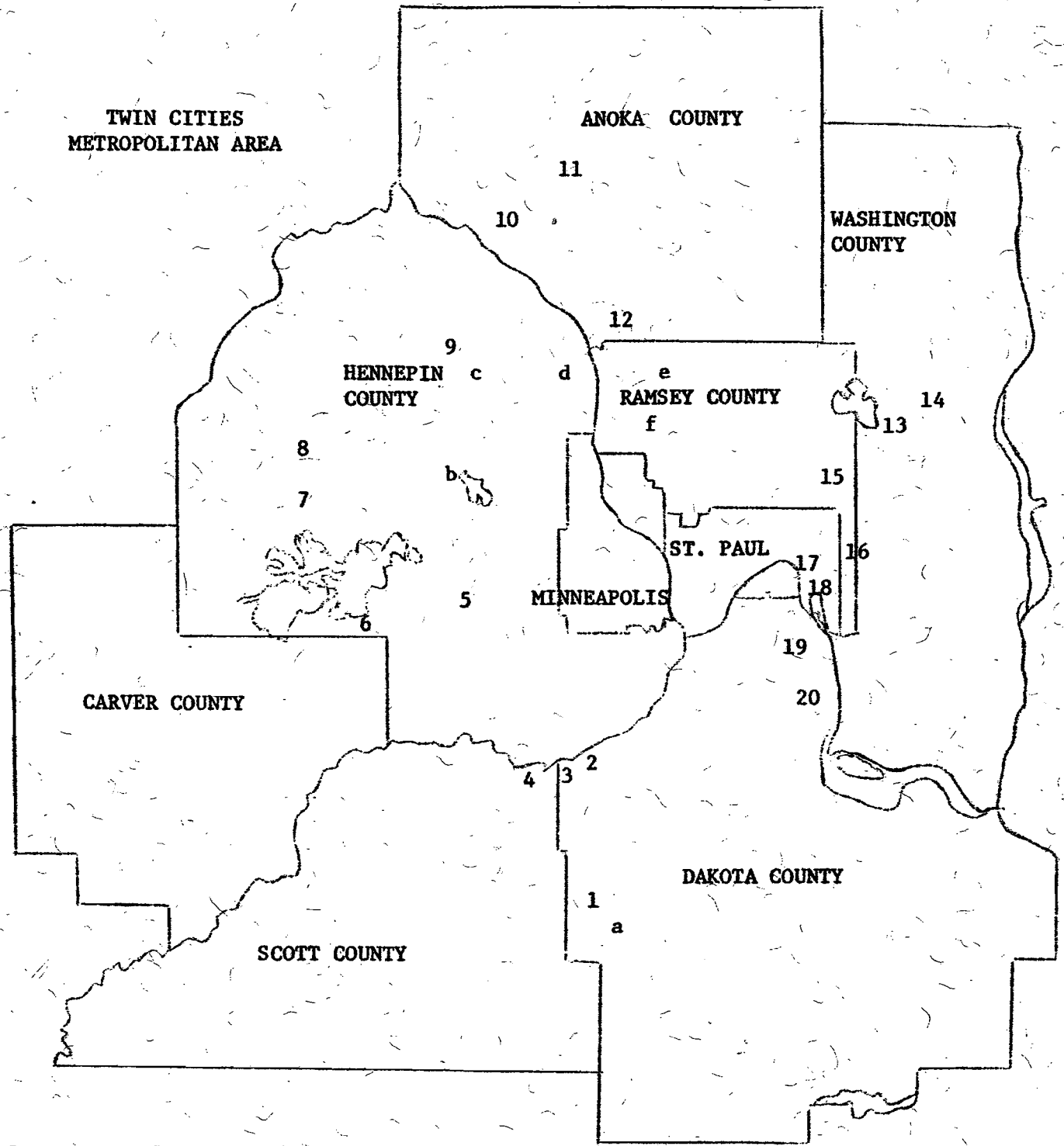
18. Pig's Eye Landfill, near Warner Road, St. Paul, Ramsey County. Privately-owned and publicly-operated by city of St. Paul. Burning prohibited. The city expects it has about 12 to 15 years left at this 200-acre site before it must look elsewhere.

19. South St. Paul City Dump, on Mississippi River flats, South St. Paul, Dakota County. Publicly-owned. Open to residents of South St. Paul only. The 10-acre site is expected to be filled in 1½ years.

20. Rubbish Ranch, 1 mile south of South St. Paul on County Highway 25, Inver Grove Heights Village, Dakota County. Privately-owned. Acreage and future life unknown.

* * * * *

New Brighton Dump, New Brighton, Anoka County, northeast corner of the intersection of Interstate 694 and Interstate 35W. Privately-owned. Burning prohibited. Nearby residents have complained about rats and odors from the dump. The 38-acre site was closed late in October 1966 just as this report was being written.



Location of Dumps and Landfills Now Operating

- | | |
|-------------------|-------------------------|
| 1--Lakeville Twp. | 11--Grow Twp. |
| 2--Burnsville | 12--Blaine |
| 3--Burnsville | 13--Grant Twp. |
| 4--Glendale Twp. | 14--Grant Twp. |
| 5--Hopkins | 15--North St. Paul |
| 6--Excelsior | 16--Maplewood |
| 7--Orono | 17--St. Paul |
| 8--Medina | 18--St. Paul |
| 9--Maple Grove | 19--South St. Paul |
| 10--Anoka | 20--Inver Grove Heights |

Locations of Dumps and Landfills Recently Closed

- a--Lakeville Village
b--Plymouth
c--Maple Grove
d--Brooklyn Park
e--New Brighton
f--New Brighton

Regulation

The State Department of Health does not have regulations for the proper operation of sanitary landfills, but the Department does advise communities on the key factors to include in their local ordinances. The following recommendations were included in a letter from F. L. Woodward, director of the Division of Environmental Health, for the Department, to a Township Board on the fringe of the Twin Cities area in July, 1966:

LOCATION--The area should be adequately isolated from residential buildings to eliminate the occurrence of nuisance conditions.

ACCESS--It should be readily accessible for refuse haulers.

DRAINAGE AND FLOODING--It should not be located where it will obstruct natural surface or sub-surface drainage. The area should not be subject to flooding and surface water should be diverted from the disposal area.

DIKING--Whatever diking and/or grading is necessary to eliminate drainage from the disposal area should be completed before the operation begins.

EQUIPMENT--Sufficient equipment should be provided for moving, compacting and covering the refuse, such as a crawler type tractor with bulldozer blade or front end loader. Standby equipment from local sources should be available for short periods in the event of equipment breakdown.

PERSONNEL--The operation should be supervised, operated and maintained by trained personnel. All refuse unloading should be controlled.

BLOWING--Arrangements should be made to control blowing refuse by use of movable fencing, such as snow fence or portable chicken wire fence.

COVER--At the end of each day, all refuse should be completely covered with six inches of compacted earth to make a closed cell of each day's deposits. The final covering for surface and side slopes should be compacted to a depth of at least 24 inches.

DEPTH OF REFUSE--No layer of refuse should exceed an average depth of six to eight feet after compaction.

DECAYING MATERIAL--Small dead animals and truck loads of spoiled foods, dead chickens, entrails, eggs or quantities of putrescible materials should be deposited in a separate trench or pit and covered immediately after unloading.

BURNING--Burning of combustible materials should not be practiced at the disposal site since this accomplishes little volume reduction and creates a very offensive nuisance condition. The only material which could be allowed to be burned would be tree or brush trimmings and this should be done in an area separate from the disposal area.

FIRE PROTECTION--Adequate arrangements should be made for fire protection.

SALVAGING--If salvaging is permitted it should be adequately supervised and should not interfere with the proper operation of the disposal facility.

ties. Salvaged materials should be removed from the site daily or stored in a rodent-proof building.

INSPECTION--Inspection for and control of insects, rodents and odors should be conducted until landfills are stabilized. Collection of surface water should be prevented. Chemical control of flies, mosquitoes, rodents or odors is only temporary, and arrangements should be made for other permanent corrective measures as the conditions may occur.

FINAL CHECK UP--After the sanitary landfill is completed, inspection and maintenance should be conducted until the fill has become stabilized. Cracks, depressions and erosion of the surface and side slopes should be corrected promptly.

A regulation of the State Board of Health dated March 16, 1955, provides, among other things, that no system for the disposal of garbage or refuse can be placed in operation or any existing system be materially altered or extended "until complete plans and specifications for the installation, alteration or extension, together with such information as the State Board of Health may require, have been submitted in duplicate and approved by the Board insofar as may features thereof affect or tend to affect the public health, and no construction shall take place except in accordance with the approved plans." According to personnel in the State Department of Health such a regulation has the force of law and should be followed. But, as a practical matter, they said, the regulation is virtually ignored. The State Board of Health, they said, has no power to enforce such regulations.

According to personnel in the State Department of Health, the only enforcement power at the state level now against dumps and landfills rests with the Water Pollution Control Commission. Under the Water Pollution Control Act, permits are required from the Commission for any waste disposal facility located in the following area:

- (a) Where water is present at or near the surface, such as sloughs or swamps.
- (b) In river flood plains which are subject to flooding.
- (c) Adjacent or lakes or streams which drain to such waters.
- (d) Ravines or valleys which may at times carry run-off or snow melt.
- (e) Near municipal or private water supplies, either surface or underground.

The Commission can require any one of a number of safeguards, such as diking around the site, diversion or containment of surface drainage, sealing of pervious soil or rock formations, covering of dumped or stored material to minimize erosion and control drainage and storm water percolation, regular supervision and control of operations.

The Water Pollution Control Commission believes the best location for a landfill is one above flood levels, far removed from lakes, wells, or local drainage courses, and have a substantial depth of relatively impervious surface soil above ground water table. (Although many disposal sites in the Twin Cities metropolitan

area are located where permits from the Commission would seem to be needed, the Commission has granted only one permit in the area. Because of press of other business the Commission has not made more attempts to require permits.)

If a disposal site is located in an area which is not considered to be a threat to water pollution, the Water Pollution Control Commission does not have jurisdiction, even though the site does not comply with recommended standards of the State Department of Health.

An example of a state with stricter regulation against refuse disposal sites is Michigan, which in 1965 enacted a system of state licensing of sites under the Commissioner of Public Health. The Commissioner is given power to set up regulations which must be followed by licensees. The state license fee is \$25 annually. A performance bond of \$500 per acre of disposal area, but not less than \$2,500, also is required. When an application for a disposal site is received, an inspection of the site is made and a determination is made as to whether the proposed operation complies with the act and regulations of the Commissioner. The regulations set forth specific requirements for the operation of sanitary landfills, including compaction and daily cover. The regulations provide that open dumps shall not be permitted unless the location and specific method of operation has been approved in writing by the health department and concurred in by the director and provided that the isolation and operation and maintenance does not constitute a nuisance or hazard to health.

Advantages of Sanitary Landfills

There are several advantages of sanitary landfills:

(a) Otherwise unusable, worthless land can be reclaimed. Parks, golf courses, ball fields and other recreational uses are common possibilities. In addition, if care is taken, land may even be reclaimed for industrial uses. This has been true in Hopkins, for example. Another example is in Burnsville where an operator is conducting a landfill solely so he can reclaim some lowlands as valuable industrial property. A report of the Minnesota Outdoor Recreation Resources Commission has reported of success in other states in creation of park sites through carefully planned sanitary landfill. The important factor to remember in reclaiming a sanitary landfill for other uses is that the other use or uses should be determined before the landfill operation begins. Then the placement of certain materials can be taken into account. For example, future roadbeds would not be filled with normal refuse as would future open grassland.

(b) Landfill constitutes a relatively simple method of waste disposal. No great amount of on-site capital investment is required. The most important equipment in a landfill site, the bulldozers or similar earth-moving machinery, are easily transported to another location.

(c) A landfill can take all types of refuse. Separation of burnables and non-burnables is unnecessary. There are few types of refuse, if any, which cannot be placed in a sanitary landfill. Bulkiness is rarely a problem. Some municipalities in the Twin Cities area have issued limited landfill permits which prohibit garbage but allow other types of refuse.

(d) Landfill usually constitutes a relatively inexpensive method of disposal when compared to incineration, the other method in widespread use in this country.

Disadvantages of Sanitary Landfills

(a) If regulations are not followed closely and regularly, a landfill can quickly take on the appearance of an open dump, making the possibilities of fires more likely and contributing to the breeding of flies and rats. Landfill requires strict and continuous compliance with regulations, which may be difficult to attain. Several examples exist in the Twin Cities area of disposal sites which are advertised as "sanitary landfills" but which do not meet standards.

(b) It often is difficult to find suitable locations for landfills because of requirements that they be located far from residential development. It is possible to operate a landfill near residential development as part of a plan to reclaim land for parks, for example, but many citizens oppose such moves, knowing that in many cases the term "sanitary landfill" has turned out to be little more than a euphemism for "open dump".

(c) The amount of land needed for a sanitary landfill often is not available unless a site is several miles from the main centers of population. This increases the cost of disposal because of long hauls which refuse collectors must make.

II. Incineration

Many municipalities throughout the nation today burn refuse in high-temperature, multi-ton municipal incinerators which reduce combustible refuse to ashes. An incinerator reduces refuse to about 25 per cent of its original weight and 10-15 per cent of its original volume. Ashes from an incinerator make good fill material and usually are placed in sanitary landfills. Temperatures in a properly operated incinerator will range from 1400 to 1800 degrees Fahrenheit, which is hot enough to burn all refuse and the smoke to minimize air pollution. Additional control devices usually are needed to fully control air pollution.

Much of the material placed in incinerators is not combustible, such as cans and glass. But modern incinerators can be constructed so that the non-combustibles can pass through with the combustibles.

Incineration has many advantages as a method of refuse disposal. Haulers do not have to travel long distances to empty their loads. Incinerators can be located within a city. With incineration the volume of refuse which must be disposed of in a landfill is reduced many times, thereby prolonging the life of the landfill. The residue from the incinerator makes much cleaner fill than does normal refuse.

Perhaps the main disadvantage of incineration is its relative higher cost when compared to sanitary landfill. A study by the Office of Local Government for the State of New York estimated that with hauling distances the same, the cost of incineration is about $2\frac{1}{2}$ times greater than sanitary landfill. This cost differential decreases, of course, as the distance of haul to the sanitary landfill increases. The New York study indicated that with a 20-mile round trip for sanitary landfill as compared with a 5-mile round trip for incineration, the annual cost of incineration still was substantially more than sanitary landfill. The relative costs of the two methods become about equal when the round trip haul for sanitary landfill is about 30 miles. However, it is possible to make sanitary landfill more economical up to a round trip of 50 miles by use of a transfer station. A transfer

station is a building located near the point of collection, where haulers may bring their loads and transfer them to large vans with many times the capacity of the trucks used for collection. These large vans then make the long trip to the land-fill. Transfer stations are not economical unless the round trip is at least 20 miles. As far as we know, there are no transfer stations in the Twin Cities area today.

Construction costs of incineration vary considerably. A representative of a firm which manufactures incinerators told us that a figure of \$4,000 per capacity ton is a good estimate. That is, if an incinerator had a capacity of 600 tons of refuse a day, its cost would be approximately \$2,400,000.

Costs of operation of an incinerator also vary considerably, with one of the more important reasons for the differences in cost being the percentage of capacity at which an incinerator is operating. If the incinerator is under-utilized, the cost per ton increases considerably. We were informed that it is possible to finance the operation costs and amortization of bonds for construction with a charge of approximately \$4 per ton of refuse at a properly operated incinerator.

Extent of Incineration in the Twin Cities Area

The extent of incineration as a means of disposal is not widespread today in the Twin Cities area. Three municipal incinerators are in operation, two in Minneapolis for garbage only and one in St. Louis Park for mixed refuse. A privately owned incinerator opened near downtown Minneapolis a few years ago but was closed down when private haulers found it more economical to go to dumping sites instead. Several businesses, industrial firms and institutions have their own private incinerators. One of the largest is the incinerator operated by the University of Minnesota. In addition about 10 to 15 per cent of the private dwellings in the Twin Cities area are equipped with indoor incinerators.

Following is a description of the municipal incineration operations in Minneapolis and St. Louis Park:

Minneapolis - The Riverside incinerator, 28th Avenue North and Pacific Street, located along the Mississippi River, was built in the late 1920's. It has a capacity of 200 tons of refuse per 24-hour day. The Southside incinerator, 28th Street and Cedar Avenue behind Layman's Cemetery, was built in 1939. It also has a capacity of 200 tons of refuse per 24-hour day. These two incinerators are used almost exclusively to burn residential garbage in Minneapolis which is collected by the city's municipal forces. In 1965 a total of 38,949 tons was burned, with 93 per cent of that collected by the city's municipal forces. The balance was from private collectors who pay at a rate of \$4 a ton for dry refuse and \$9 a ton for wet refuse to dump at the incinerator. Based on a five-day work week the incinerators in 1965 were operated at approximately 37 per cent of capacity. The incinerators operate on a 16-hour day.

The number of tons of garbage burned at the incinerators has decreased steadily over the past 20 years. In 1946 a total of 54,075 tons was burned. In 1965 the figure was 38,949. The decline can be attributed mainly to two factors: (b) Changes in the packaging of foods. Many waste products, such as vegetable greens, no longer need to be disposed of by the housewife. Much food now is sold in packages pre-prepared or cleaned. (b) Increasing use of automatic sink disposal systems which grind garbage into sewers.

A total of 20 municipal employees are employed at the two incinerators in Minneapolis. Total cost of operation of the incinerators in 1965 was \$184,892. Since 38,949 tons were burned, the cost per ton was \$4.75. The operating cost does not include any provision for depreciation of plant, though both incinerators probably would be totally depreciated by now. As far as we could determine the city does not have a replacement fund for the incinerators. The Southside incinerator was built at a cost of \$269,000.

Because both incinerators are used to less than capacity the city of Minneapolis has investigated the advisability of closing down the older, Riverside incinerator, and using the Southside incinerator only. The superintendent of sanitation told us that the extra costs of hauling garbage would be about \$200 a day, and this would mean any economies from closing the one incinerator would be uncertain.

Ashes from the incinerators are dumped at two locations, in north Minneapolis along the west bank of the Mississippi River, and in southeast Minneapolis in a swampy area near industrial development.

St. Louis Park - The City of St. Louis Park built an incinerator in 1954 at a cost of \$233,000. It has been depreciated at a rate of approximately \$10,000 per year. This incinerator is operated so as to burn a limited amount of mixed refuse, that is, not only garbage, but also other items normally found in the household refuse, such as paper, tin cans of one-gallon capacity or less, bottles, etc. Explosive materials or bulky, non-inflammable materials such as brush and grass clippings are not collected for burning at the incinerator. The incinerator currently is handling refuse collected from residential and commercial customers by a private hauler under contract with the city.

The design capacity of the plant is 150 tons per 24 hours. The incinerator burned approximately 10,900 tons of refuse in the 12-month period ending April, 1966. The incinerator is presently operating on one 8-hour shift. There is a wide variation in daily tonnage burned. For example, in September, 1965, the maximum daily tonnage delivered to the plant was 67 tons and the minimum daily tonnage was 35 tons. On days of heavy loading, the operating crew at the incinerator works overtime to complete the burning.

A study in February, 1964, showed the cost at that time was \$5.69 per ton to incinerate the St. Louis Park refuse. Hopkins at that time was interested in bringing its refuse to the St. Louis Park incinerator. The study revealed that if St. Louis Park charged Hopkins \$3.80 a ton, St. Louis Park could reduce its per-ton cost of incineration overall to \$4.32, and save \$11,000 a year. (Hopkins chose, though, to develop a new landfill site within its own community.)

Despite a fairly high per-ton cost for incineration, St. Louis Park has been able to maintain a reasonable overall cost to its citizens. Currently, for example, a resident of St. Louis Park is guaranteed once-a-week pickup of up to three 30-gallon cans of refuse. For this service he pays \$18 a year, which includes collection and complete costs of incineration and disposal (it is a special assessment imposed by the city). With this income the city pays the private collection contractor a rate of \$10.68 a year for each residence and finances the costs of incineration including plant depreciation. The city has also been able to finance the repayment of the bonds from its refuse utility fund.

Ashes from the St. Louis Park incinerator are hauled to a low area near 36th Street. The city has filled an area of 2½ acres to a depth of six feet in the past four years with the ashes.

The St. Louis Park incinerator is well maintained by timely inspection and repair. The refractory firebrick in both furnaces and flues was recently completely rebuilt and is in good operating condition.

The plant utilizes the floor type charging method which imposes definite limitations on refuse storage at the plant. If the city entered into agreements with other municipalities to dispose of their refuse, the plant operation could be expanded to a 16-hour shift operation. In this case it would probably be necessary to expand the plant facilities to include a storage pit with mechanical charging equipment. In this way the refuse collected during 8 hours of daytime collection could be burned over a period of 16 hours of incinerator operation. The plant has furnace capacity in excess of present usage, but lacks storage and charging capacity for efficient increased collection over present operations.

Previous Attempts with Incineration

In 1963 a corporation made up of independent refuse haulers in the area built an incinerator at 91st and Central in Blaine Village, Anoka County. The incinerator was destroyed by tornado in 1965 and has not been rebuilt. Reportedly the haulers were not getting a good return on their investment when the incinerator was in operation. Also, it was causing air pollution problems. There has been no attempt to rebuild it.

Two years ago a private businessman opened an incinerator in a building just west of downtown Minneapolis. The incinerator had a potential capacity of 300 tons a day but it was closed down because private haulers found they could get by cheaper by hauling their refuse to outlying dumps or landfills. The Minneapolis Suburban Refuse Removal Association, an organization of private haulers, has been recently investigating the possibility of reopening the incinerator.

III. Garbage Grinding

Perhaps the most convenient, and sanitary, method of disposing of garbage for the housewife is the use of the automatic sink garbage grinder, which enables all food wastes to be placed directly into the sewer.

About 15 per cent of the dwellings in the Twin Cities metropolitan area are equipped with garbage grinders. The incidence of garbage grinding probably is much more prevalent in suburban areas than in the central cities, particularly since garbage grinders are automatically installed in all new homes of many housing developments.

Garbage grinding does not significantly reduce the total amount of refuse which needs to be removed from each residence. Only about 10 per cent of the volume of refuse produced today is garbage. Nevertheless, it is able to remove from a householder's trash can the materials which otherwise would produce undesirable odors and present health problems.

Garbage grinding affects sewage disposal, but the extent of this effect is not clear. A consulting engineer for the Minneapolis-St. Paul Sanitary District

told us that future construction plans for the district involve an assumption that garbage grinding will increase, and that the district should be able to take care of the extra sewage flow because of garbage grinding.

The Minneapolis sewer engineer informed us that some of the sewers in Minneapolis, particularly those which are old and located in commercial areas, become overloaded from garbage grinding by restaurants and have to be cleaned out on a regular basis. The main reason for this overloading is that the angle of the sewer is not great enough to produce a rapid flow, so much of the material sinks to the bottom. This problem does not exist to any significant extent in residential areas, he said, because in these areas the amount of water which is used to flush down the garbage into the sink is sufficient to produce enough flow to push the garbage along. Further, the amount of garbage generated at each residence is not significantly large to pose sewer problems.

We are aware of one central municipal garbage grinder in the Twin Cities area, in South St. Paul. Municipal employees collect garbage from approximately 1,400 dwellings in South St. Paul and deliver it to the central garbage grinder. The garbage is ground into the municipal sewage system but has no significant effect on the sewage treatment problems because with the stockyards South St. Paul's sewage content already is abnormally high.

IV. Indoor Home Incineration

Approximately 17 per cent of the dwellings in the Twin Cities area are equipped with private indoor incinerators which burn paper, garbage and other combustibles at high temperatures. Many of these are not equipped with after-burners which are necessary to produce smokeless, odorless vapors. Such incinerators do not meet present-day standards and, as far as we could determine, most new sales today of indoor incinerators are those equipped with after-burners.

A dwelling must be equipped with a fireplace-type chimney to be adequate for incinerators with after-burners.

The most widespread use of indoor home incineration in the Twin Cities area is in West St. Paul, which has required such incinerators in all residential units built since September 27, 1955.

V. Hog Feeding

In 1953 the Minnesota State Legislature passed a law requiring that garbage be cooked at a temperature of 212 degrees for 30 minutes before it could be fed to livestock or poultry. Until that time hog feeding was a very popular method of disposing of garbage in the Twin Cities area. According to a representative of the Livestock Sanitary Board, which is charged with licensing feeders of garbage to livestock or poultry, there were between 130 and 150 licensees in Minnesota in 1953. Today there are only 39, 14 of them in the seven-county Twin Cities area. These are hog farmers, with mainly large commercial customers in Minneapolis and St. Paul. The higher cost of cooking the garbage has contributed to the decline in hog-feeding as a popular method of disposing of garbage. The representative of the Livestock Sanitary Board predicts that hog feeding of garbage will gradually end.

VI. Other Disposal Methods

Composting - The previously mentioned methods of disposal of refuse--in

the ground (landfill), in the air (incineration), and in the water (garbage grinding)--all assume that refuse is pure waste without value, though landfill does have the effect of land reclamation in some cases.

Composting is a method of handling and processing the organic material in refuse--basically the garbage--and producing a soil conditioner, a usable product. Composting usually involves also a utilization of the sludge (solid remains) at a sewage treatment plant since garbage by itself does not make up a very large amount of material for composting.

We are not aware of any composting plants in the Twin Cities area today. The sludge produced at the Pig's Eye Treatment Plant for the Minneapolis-St. Paul Sanitary District is incinerated. It appears clear that if the Twin Cities area were to seriously consider composting it would have to involve also the disposal of sludge from the Minneapolis-St. Paul Sanitary District.

Composting would be sufficient to handle the garbage portion of refuse, plus the leaves, grass clippings and other organic materials. It would not, though, solve the problem of handling the balance of the refuse which is about 50-75 per cent of the total. Other methods would have to be found to dispose of the glass, paper, plastics, cans and other materials.

Although past experience in the United States with composting has met with limited success, and outright failure in some cases, research is continuing. The U. S. Public Health Service is building an experimental plant at Johnson City, Tennessee. Compost plants are in operation in a few cities today, including Altoona, Pa., Largo, Fla., and Wilmington, Ohio.

Salvaging - As was noted in the earlier discussion on dumping and landfill, many private operators of dump sites in the Twin Cities area today have major salvage operations, by which they remove material--primarily metals--for resale.

Salvaging has an advantage from the standpoint of conservation of our resources in that material is not buried or burned but it is saved, sold and re-used in some other form.

There are several unanswered questions, though, in connection with the desirability or feasibility of salvage on a large scale. Does the value of the salvage sufficiently offset the process of separating the various types of refuse? What are the potential uses of the various wastes? Much of the evidence we have received would appear to indicate that the value of the salvaged material does not justify the expense of separating out the various types of refuse.

BACKGROUND--FEDERAL LEGISLATION

In 1965 Congress approved the Solid Waste Disposal Act, providing federal funds "to public or private agencies and institutions and to individuals for research, training projects, surveys and demonstrations (including construction of facilities), and to provide for the conduct of research, training, surveys and demonstrations by contract with public or private agencies and institutions and with individuals..."

The act is administered by the Secretary of Health, Education and Welfare. Congress authorized to be appropriated \$7 million for the fiscal year ending June

30, 1966; \$14 million in the fiscal year ending June 30, 1967; \$19.2 million for the fiscal year ending June 30, 1968, and \$20 million for the fiscal year ending June 30, 1969.

Rules and regulations of the Department of Health, Education and Welfare provide that all federal grants under this act, including those for research, cannot exceed two-thirds of the cost.

As far as we could determine only one application has been made in Minnesota under this Act and that application was rejected. The application was made by the city of St. Paul earlier this year for \$20,000 for a study of refuse collection and disposal in St. Paul and its immediate area. The proposed study did not cover the entire metropolitan area. We were informed that the proposal was rejected by the federal government at least in part because the study did not propose to cover the entire metropolitan area.

Regarding demonstration projects under the Act, the rules and regulations of the Department of Health, Education and Welfare provide that grants will not be made for demonstration of new and improved methods of disposal unless open dumping and open burning at existing disposal sites are prohibited or a schedule has been established for elimination of open dumping and open burning within the jurisdiction in which an applicant proposed to conduct a demonstration.

BACKGROUND--METRO POLL

In October 1966 the Metro-Poll of the Minneapolis Star published results of a random survey of 600 adults in Hennepin, Ramsey, Anoka, Dakota and Washington Counties on various aspects of refuse collection and disposal. Following are some of the findings:

Question No. 1: As a general principle would you say it is better to have city governments provide for collection of garbage and rubbish or to let private firms provide collection service?

	City	Private	Other Answer
Minneapolis	79%	13%	8%
Other Hennepin County	41%	50%	9%
St. Paul	59%	28%	13%
Other Ramsey County, plus Anoka, Dakota and Washington Counties	32%	40%	28%
Total	57%	31%	12%

Question No. 2: Are people around here who have garbage and rubbish collection service generally satisfied or not satisfied with their service?

	Satisfied	Not Satisfied	Other Answer
Minneapolis	68%	14%	18%
Other Hennepin County	87%	4%	9%
St. Paul	79%	3%	18%
Other Ramsey County, plus Anoka, Dakota and Washington Counties	78%	6%	16%
Total	77%	8%	15%

Main reasons for dissatisfaction were that the service was too infrequent, irregular, undependable and that everything wasn't collected.

Question No. 3: Do you think people should or should not be allowed to burn trash in their backyards?

	Should	Should not	Other Answer
Minneapolis	70%	27%	3%
Other Hennepin County	67%	26%	7%

Question No. 3 (con't)

	Should	Should not	Other Answer
St. Paul	69%	20%	11%
Other Ramsey County, plus Anoka, Dakota and Washington Counties	71%	19%	10%
Total	69%	24%	7%

Question No. 4: Do you have an electric garbage disposer in your kitchen?

	Yes	No	Other Answer
Total	15%	84%	1%

Question No. 5: Do you have an indoor incinerator for burning garbage and rubbish?

	Yes	No	Other Answer
Minneapolis	13%	86%	1%
Other Hennepin County	5%	94%	1%
St. Paul	40%	58%	2%
Other Ramsey County, plus Anoka, Dakota and Washington Counties	16%	83%	1%
Total	17%	82%	1%

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ABOUT THE CITIZENS LEAGUE. . .

The Citizens League is a non-partisan, independent organization of more than 3,200 members, founded in 1952, and dedicated to the improvement of local government in the Twin Cities area.

Citizens League reports, which provide assistance to public officials and others in finding solutions to complex problems of local government, are developed by volunteer research committees, supported by a fulltime professional staff.

The League's annual budget is financed by annual dues of \$10 (\$15 for family memberships) and contributions from more than 600 businesses, foundations, and other organizations.