

ANALYSIS OF THE
TRASH REMOVAL SYSTEM

390 - 68

AUTHORS: J. KUYAWA
G. HEWITT



COMMUNITY SYSTEMS FOUNDATION

ANN ARBOR • BALTIMORE • INDIANAPOLIS

REGIONAL OFFICE
22 West Road, Suite 200
Towson, Maryland 21204
391 - 828-6533

September 15, 1967

Mr. John J. Laverty
Assistant Administrator
The Johns Hopkins Hospital
Baltimore, Maryland 21205

Dear Mr. Laverty:

During the analysis of the Housekeeping Department's operations in the Osler Building (Report No. MD-JH-11a), the Manager of Housekeeping Services requested that the C.S.F. staff conduct a study of the trash removal system of the Hospital. The original objective was outlined as being an evaluation of the utilization of man-time of the trash crew. This objective was expanded to include a complete analysis of the trash removal system. This report contains the analysis and recommendations of that study which was conducted by Mr. G. Hewitt of the Foundation's staff.

We would like to acknowledge the cooperation and assistance of Mr. Arnold Flakowitz, the Manager of Housekeeping Services, Mr. Charles Armstrong, the Supervisor of Trash Removal Service, and various members of the Hospital's administrative staff who contributed to the analysis and recommendations.

Respectfully submitted,

James G. Kuyawa, Jr.
Project Director

/sjk

BOARD OF TRUSTEES

DEAN H. WILSON, CHAIRMAN
KARL G. BARTSCHT
BARTON R. BURKHALTER, PH.D.
WILLIAM D. DRAKE, PH.D.

RICHARD D. DUKE, PH.D.
MERRILL M. FLOOD, PH.D.
ROBERT E. FRYER, L.L.D.
FREDERICK L. GOODMAN, PH.D.

SISTER MARY LEONETTE, R.S.M.
PATRIC E. LUDWIG
MALCOLM D. MAC COUN
MATHEW W. STEINER

RUDOLF J. PENDALL
FORBES W. POLLIARD

TABLE OF CONTENTS

Synopsis	i
Present System	1
Appraisal of Present System	9
Conclusion	24
Appendix	

SYNOPSIS

Project Objective

The objective of this project was to evaluate personnel utilization, scheduling, procedures, and the refuse contract of the Hospital, and to suggest means by which these activities may be improved.

Summary of Recommendations

The following proposals are recommended for implementation:

1. Adopt the proposed schedules and pickup routes which will result in a staff reduction of six man-days in the trash room of the Housekeeping Department.
2. Re-evaluate the trash removal means of the Hospital as outlined in the report and adopt the use of a compaction unit within the Hospital and a dumpster to service the outside areas.
3. Instruct the employees in the use of disinfectant on trash trucks and aseptic techniques.

PRESENT SYSTEM

CONTRACT

Frank P. Bohager and Sons, Inc. provides a service contract to The Johns Hopkins Hospital for the removal of refuse at a cost of \$20,280 per year. This includes a dumpster (\$14,034 per year) and a chauffeur (\$6,246 per year). The dumpster is a twenty-five cubic yard truck (approximate purchase cost \$26,600) and has a compaction ratio of 3:1 to give it a full capacity of seventy-five cubic yards. (The above figures were given by Mr. William Fannon, Vice-President of Bohager.)

The dumpster leaves its bay at 11:30 a.m. to make its scheduled outside pickups and then to go to the dump. The outside pickups are:

Monday-Wednesday-Friday

Hampton House
Woods Building (note: not included in original contract)
Receiving
Grounds

Tuesday-Thursday

Grounds
Receiving

The dumpster returns between 1:15 p.m. and 1:45 p.m. If the dumpster returns first to the Bohager shop for maintenance, the round trip exceeds the two hour required time. (Appendix)

The chauffeur has four functions:

1. He assists in emptying the housekeeping assistants' carts and the trash trucks as they are brought into the trash room.
2. He operates the dumpster's blade to pack the refuse into the truck.

3. He makes pickups with the dumpster from areas outside the trash room.

4. He drives the dumpster to the dumping grounds.

TRASH ROOM PERSONNEL

The following is a copy of the weekly schedule maintained in the trash room. Employee "D" is used as a relief for off-days and vacation. The remaining employees are full-time staff within the trash room.

	<u>MONDAY</u>	<u>TUESDAY</u>	<u>WEDNESDAY</u>	<u>THURSDAY</u>	<u>FRIDAY</u>
Employee "A"	8:00 - 4:30	8:00 - 4:30	OFF	8:00 - 4:30	8:00 - 4:30
Employee "B"	OFF	7:00 - 3:30	7:00 - 3:30	7:00 - 3:30	7:00 - 3:30
Employee "C"*	8:00 - 5:00	8:00 - 5:00	8:00 - 5:00	8:00 - 5:00	8:00 - 5:00
Employee "D"	8:00 - 4:30	OFF	8:00 - 4:30	IN ANOTHER AREA	—————→
	<u>SATURDAY</u>	<u>SUNDAY</u>			
Employee "A"	8:00 - 4:30	OFF			
Employee "B"	7:00 - 3:30	OFF			
Employee "C"	OFF	OFF			
Employee "D"	IN ANOTHER AREA	8:00 - 4:30			

Each man has an assigned route for trash pickups outside of the trash room. In the trash room, the routine is as follows:

1. Empty their own trash trucks.
2. Hose out the trash trucks.
3. Hose out garbage cans which will be returned to areas.
4. Assist housekeeping personnel to empty their work carts of trash.
5. Keep the area cleaned.

*Employee "C" works forty hours per week. He takes one hour off for lunch each day.

ROUTES

The following depicts the areas of responsibility for each employee, the approximate time for departure, and the travel time of a round trip.

Employee "A"

Employee "A"'s route has five pickup areas, four of which are in the basement. He uses a tow motor to make his rounds. There is no set time for an area pickup, only approximate times. Employee "A" services some of his areas twice daily, once beginning at 9:00 a.m. and the other 2:00 p.m.

(The bracketed areas indicate that one trash truck serves these areas.)

<u>AREA</u>	<u>NUMBER OF PICKUPS</u>	<u>APPROXIMATE DEPARTURE TIME</u>	<u>ROUND TRIP TRAVEL TIME FOR PICKUP</u>
Marburg	2	9:00 a.m. 2:00 p.m.	6 Min.
Administration } Engineering }	2	9:00 a.m. 2:00 p.m.	8 Min.
Wilmer	2	9:00 a.m. 2:00 p.m.	7 Min.
Harriet Lane } Phipps }	2	9:00 a.m. 2:00 p.m.	10 Min.
Carpenter's Shop } Paint Shop } Sewing Room } Linen Room }	1	10:30 a.m.	29 Min.
Total Pickup Time			91 Min.

Employee "B"

Employee "B"'s prime responsibility is disposing of animal carcasses from the research areas of the Hospital and the University. He has the use of the incinerators on the eighth floor of the Pathology Building and the fourteenth floor of the Blalock Building. He has stated that the incinerator in the Pathology Building can consume the carcasses quicker than the incinerator in the Blalock Building. Hence, he uses the Pathology incinerator for the disposal of the late afternoon pickups of carcasses.

The following shows all areas covered on each pickup run. (Unless indicated, all pickups are for animal carcasses.)

<u>AREA</u>	<u>APPROXIMATE DEPARTURE TIME</u>	<u>TOTAL TIME</u>
Clean out and fire up incinerators	8:00	30 Min.
B-11 B-13 B-14 (incinerator) Path-8 (incinerator) Path-basement Path-8 (incinerator) Path-basement (trash)	8:30	60 Min.
Return Path trash truck	9:45	6 Min.
Woods B-14 (incinerator) B-13 (trash)	10:00	35 Min.
Dispensary 5 (trash)	10:45	16 Min.
Assist the Chauffeur on outside pickups	11:30	30 Min.

<u>AREA</u>	<u>APPROXIMATE DEPARTURE TIME</u>	<u>TOTAL TIME</u>
Brady 6	12:30	20 Min.
B-11		
B-12		
B-13	1:00	51 Min.
B-14		
B-13 (trash)		
C.M.S.C. B-14	2:00	27 Min.
Path-basement (trash)	2:30	13 Min.
Canteen (trash)	3:15	15 Min.
B-13 (trash)	4:15	18 Min.
Shut off Incinerators	4:45	15 Min.
Total Pickup Time		336 Min.

Employee "C"

Employee "C"'s route is divided between basement pickups and areas above the basement in the Dispensary Building. Employee "C" picks up bottle trash from the Osler and Halsted Buildings each morning.

<u>AREA</u>	<u>NUMBER OF PICKUPS</u>	<u>APPROXIMATE TIME OF PICKUP</u>	<u>TRAVEL TIME FOR PICKUP</u>	<u>DUMP TIME</u>
Woman's Clinic	2	9:00 A.M. 3:00 P.M.	6 Min.	3 Min.
Pharmacy	3	9:00 A.M. 12:00 P.M. 3:00 P.M.	7 Min.	3 Min.
Dispensary	2	9:00 A.M. 2:00 P.M.	7 Min.	3 Min.

AREA	NUMBER OF PICKUPS	APPROXIMATE TIME OF PICKUP	TRAVEL TIME FOR PICKUP	DUMP TIME
Buttery	2	10:00 A.M. 1:30 P.M.	15 Min.	3+5 Min. *
Canteen	2	10:30 A.M. 1:00 P.M.	15 Min.	3+5 Min.
TB & Bact. Lab	1	2:00 P.M.	15 Min.	3+5 Min.
GOR	2	11:00 A.M. 2:30 P.M.	20 Min.	3 Min.
R.R. **	2			
Osler & Halsted Bottles	1	7:30 A.M.	68 Min.	3 Min.
Total Pickup Time/Day			230 Min.	

* The "+ 5 Min." is time to hose out returned twenty gallon plastic garbage cans.

** In the A.M. Recovery Room trash is picked up on the Osler and Halsted pick up of bottle trash. In the P.M., Recovery Room is serviced on the G.O.R. pick up.

The foregoing is a listing of areas serviced on a daily basis, Monday through Friday by the trash room personnel. On weekends, there are no pickups above the basement level. The following is a list of weekend pickup areas:

Marburg	Pathology
Engineering	Woman's Clinic
Wilmer	Pharmacy
Harriet Lane	Dispensary

PROCEDURES

Above the basement level, the trash crew do not combine two pickup areas into one pickup. The result is that sometimes they return to the trash room with a partially filled trash truck. Their departure times for pickups are not definite, but may vary from thirty to sixty minutes depending upon the area involved. In most cases, the employee removes the filled plastic liner and inserts a new one. In the areas of the Buttery, Canteen, and Bacteriological

Laboratory, he also exchanges the twenty gallon containers.

For basement pickups, large trash trucks are stationed at the following areas:

<u>AREA</u>	<u>No. OF Trucks</u>
Marburg	1
Administration Engineering	1
Wilmer	1
Phipps Harriet Lane	1
Pathology	1
Woman's Clinic	1
Pharmacy	1

The crew from the trash room does either of the following:

- A. removes the full truck, empties the trash and returns a clean truck to the area, or
- B. replaces the full truck with an empty one and takes the full truck to the trash room to be emptied and used elsewhere.

The Dispensary, Osler, Halsted, Brady, C.M.S.C., and Blalock Buildings do not have stationary trucks. In the Dispensary Building there is an alcove where the filled bags are stored until a trash room employee removes them, both A.M. and P.M.

On the floors above the basement where a trash truck is stationed, the Housekeeping assistants pick up their floor's refuse twice daily and deposit it in the trucks. In the late A.M., a porter from Osler, a porter from Halsted, and a porter from Marburg, each secures a trash truck from the trash room and makes his own pickup of trash from the individual floors.

In the P.M., each Housekeeping assistant brings her own trash to the trash room. The Housekeeping personnel of Brady and C.M.S.C. bring their own trash to the trash room, both in the A.M. and P.M. Around noon, a porter from Housekeeping removes the trash from the Blalock 2 clinic area. The remaining floors and buildings are handled in the night program.

There are other areas in the Hospital that dispose of their own refuse:

1. Main Kitchen
2. Nutrition Storeroom
3. Central Supply
4. Animal care areas on Blalock 11 and C.M.S.C. 11.

The Main Kitchen has three trash trucks and disposes of their own trash after:

1. the dishroom operation of the breakfast dishes;
2. the food preparation of the noon meal;
3. the dishroom operation of the noon dishes;
4. the dishroom operation of the evening meal dishes.

The storeroom has one trash truck and one flat bed. Twice daily, A.M. and P.M., they bring their own refuse to the dumpster. Central Supply also makes two deliveries daily with their own truck. The animal care areas together make only one delivery per day, using a flat bed. Occasionally, Radiology and Maintenance will make their own deliveries and other areas may call for extra pickups due to an excessive accumulation of trash.

hours of 8:00 A.M. and 4:00 P.M., the operations of this Hospital are generating waste at a very rapid rate. To impede the removal and disposal of this refuse can only hinder the efficient operation of any department.

Basis of Modification

To alleviate this problem of trash accumulation and employee and equipment idle time during the dumpster's absence, a recommendation was made and implemented to reschedule the departure time of the dumpster to 4:00 P.M. because there was no great demand placed on the dumpster and because departure at this time still enabled the outside areas to be serviced before closing. This decision was made on the assumption that a fixed capacity dumpster could handle the same quantity of trash within a twenty-four hour period, regardless of the arrival time of the refuse. This assumption proved to be invalid. It was discovered that the dumpster's capacity is dependent upon the amount of trash already packed into the dumpster at the arrival time of peak loads.

The following problems are a few of the indications that a modification of the present contract is warranted:

1. inadequacy of dumpster to meet existing needs;
2. employee and equipment idle time during dumpster's absence;
3. excessive accumulation of refuse during dumpster's absence; and
4. operation of the dumpster's diesel engine while moored.
(This practice has been outlawed by the Fire Marshall).

Also, the impact of increasing usage of disposables and the future opening of C.R.I. must be seriously considered in its relation with the trash removal system. These do not present any immediate problems, however, they re-emphasize a need for modification of the present contract.

Solutions

The following are alternatives that could satisfy the Hospital's need for trash removal service. Solutions I, II, and III satisfy the immediate need and thus eliminate idle trash truck and man-time, and the problem of trash accumulation.

I. Johns Hopkins Hospital could purchase their own dumpster. It is beyond the scope of this report to critically evaluate such a decision. Some of the advantages are:

- a) complete control over the operation
- b) depreciation allowance .
- c) salvage value.

Some disadvantages are:

- a) initial capital outlay
- b) maintenance and operating costs
- c) securing a qualified chauffeur
- d) insurance
- e) dumping costs.

II. The use of a replacement dumpster is another alternative. When the present dumpster leaves, a second dumpster would immediately replace it and remain there for twenty-four hours. This would alleviate the problem of the excessive accumulation of trash and idle man-time and equipment. Yet, because the largest dumpster only has a capacity of seventy-five cubic yards, this solution could be a constraint to the future operations of the Hospital. The exact dollar amount of this alternative is not known.

III. The use of an additional dumpster in conjunction with the present dumpster is also a possibility. A second dumpster would make the daily outside pickups. The present dumpster would be for the sole use within the Hospital. This system would free an additional six to ten cubic yards of capacity and would cost \$500 per month. It is doubtful if this increased capacity for the Hospital could satisfy any future need.

Solutions IV and V are aimed at satisfying the future needs of the Hospital by utilizing a stationary compaction unit.

IV. A compaction unit is the optimal solution. A twelve cubic yard container with a 5:1 compaction ratio is the largest unit that can be placed in the given area of the trash room. The sixty cubic yard unit, picked up twice daily, would give the Hospital a total capacity of 120 cubic yards of refuse. The outside pickups would have to be made by a dumpster. This system would eliminate all problems of the present system resulting from the dumpster's absence and, at the same time, provide sufficient additional capacity (45 cubic yards) for future use. (NOTE: Mr. William Fannon has indicated that Bohager can provide these services for the same present contract price, \$20,280 per year.)

V. This solution involves the Hospital purchasing the container, or the packing unit, or both, and having an outside firm provide pickups and dump service for the container and outside areas. Since the compaction unit system is relatively new, there is little information available for perusal, hence further analysis would be warranted.

Trash Room Personnel

The Housekeeping Department's trash room is staffed with three full-time employees and one relief person. In order to determine the amount of work done by these people, both in and out of the trash room, a two part observation was conducted. The first was a time analysis on each employee while they were in the trash room. The time was noted as being either work time or idle time. Simultaneously, the amount of time out of the trash room for each employee was being noted. The second part was an intensive job study of each employee, establishing their daily routes and the amount of time needed to make their rounds.

The results of this two part study indicated that:

1. 35% of the time within the trash room is idle time.
2. Employee "A" used 91 minutes to make his daily rounds.
3. Employee "B" used 336 minutes to make his daily rounds. 31% of his round trip time is elevator wait time. This was due largely to the inoperation of the Blalock freight elevator.
4. Employee "C" used 230 minutes to make his daily rounds.
5. Routes are duplicated.
6. There is poor scheduling of pickup times.

Routes

As a result of the two part analysis, new departure times and routes were proposed. The following lists show the area, the time of pickups, and the time per round trip for each day of the week.

Employee "A"
Monday through Friday

<u>AREA</u>	<u>DEPARTURE TIME</u>	<u>ROUND TRIP TIME</u>	<u>DUMP TIME AND CLEAN TRUCK TIME</u>
Osler and Halsted Bottle trash pickup	7:30 A.M.	75 Min.	20 Min.
Engineering pick up tow motor	9:05 A.M.	8 Min.	5 Min.
Marburg	9:18 A.M.	6 Min.	5 Min.
Wilmer	9:29 A.M.	7 Min.	5 Min.
Harriet Lane	9:41 A.M.	10 Min.	5 Min.
Harriet Lane	9:56 A.M.	10 Min.	5 Min.
BREAK	10:11 A.M.		
Woman's Clinic	10:31 A.M.	6 Min.	5 Min.
General Operating Room	10:42 A.M.	23 Min.	18 Min.
Pharmacy - inside	11:23 A.M.	8 Min.	5 Min.
Dispensary	11:36 A.M.	8 Min.	5 Min.
LUNCH			
Clean up Trash Room*	12:30 P.M.	20 Min.	
Canteen	12:55 P.M.	20 Min.	15 Min.
Carpenter's Shop	1:30 P.M.	30 Min.	10 Min.
Marburg	2:10 P.M.	6 Min.	5 Min.
Wilmer	2:21 P.M.	7 Min.	5 Min.
General Operating Room	2:33 P.M.	23 Min.	18 Min.
Bacteriology Laboratory	3:14 P.M.	20 Min.	5 Min.
Harriet Lane	3:39 P.M.	10 Min.	5 Min.
Engineering return tow motor	3:54 P.M.	8 Min.	
		<hr/>	<hr/>
		305 Min.	141 Min.

*This time can be scheduled to coincide with the removal of the trash unit.

Employee "B"

Monday through Friday

<u>AREA</u>	<u>DEPARTURE TIME</u>	<u>ROUND TRIP TIME</u>	<u>DUMP TIME AND CLEAN TRUCK TIME</u>
B-11	8:00 A.M.	60 Min.	5 Min.
B-13			
B-14 (clean out incinerator and start fire)			
Path-Morgue			
Path-8 (clean out incinerator and start fire)			
Path-8 refrigerator			
Neuro-Surgery	9:05 A.M.	15 Min.	5 Min.
Path-basement (trash)	9:25 A.M.	8 Min.	5 Min.
Canteen (trash)	9:38 A.M.	25 Min.	7 Min.
Buttery (trash)			
Gift Shop (trash)			
Break	10:10 A.M.		
Woods	10:30 A.M.	35 Min.	5 Min.
B-13			
B-14 incinerator			
B-13 (trash)			
Dispensary	11:10 A.M.	8 Min.	5 Min.
Pharmacy (box truck)	11:23 A.M.	8 Min.	5 Min.
Clean up Trash Room	11:36 A.M.		
Lunch	12:00 P.M.		
C.M.S.C.	1:00 P.M.	28 Min.	5 Min.
Brady-6 (trash)			
B-11			
B-14 incinerator			
Buttery (+ Disp. trash)	1:33 P.M.	18 Min.	7 Min.
Woods	1:58 P.M.	45 Min.	5 Min.
B-12			
B-13			
Disp.-5			
Path-8 incinerator			
Path-8 (trash)			

Employee "B"
Monday through Friday

<u>AREA</u>	<u>DEPARTURE TIME</u>	<u>ROUND TRIP TIME</u>	<u>DUMP TIME AND CLEAN TRUCK TIME</u>
B-13 (trash)	2:48 P.M.	10 Min.	5 Min.
Path-basement (trash)	3:03 P.M.	8 Min.	5 Min.
Woman's Clinic (trash)	3:16 P.M.	6 Min.	5 Min.
Pharmacy (trash inside)	3:27 P.M.	8 Min.	5 Min.
Canteen (+ Disp. trash)	3:40 P.M.	20 Min.	7 Min.
B-13 (trash)	4:07 P.M.	10 Min.	5 Min.
Pharmacy (box truck)	4:22 P.M.	8 Min.	5 Min.
Clean up area	4:35 P.M.		15 Min.
Extinguish Path-8 and B-14 incinerators	4:50 P.M.	10 Min.	
		<hr/>	<hr/>
		330 Min.	106 Min.

Saturday, Sunday, and Holiday

Pickup Schedule

<u>AREA</u>	<u>DEPARTURE TIME</u>	<u>ROUND TRIP TIME</u>	<u>DUMP TIME AND CLEAN TRUCK TIME</u>
Osler and Halsted Bottle trash	7:30 A.M.	75 Min.	20 Min.
Engineering Pick up tow motor	9:05 A.M.	8 Min.	5 Min.
Woman's Clinic	9:18 A.M.	6 Min.	5 Min.
Woman's Clinic	9:29 A.M.	6 Min.	5 Min.
Harriet Lane	9:40 A.M.	10 Min.	5 Min.
Harriet Lane	9:55 A.M.	10 Min.	5 Min.
Break	10:10 A.M.		
Marburg	10:30 A.M.	6 Min.	5 Min.
Marburg	10:41 A.M.	6 Min.	5 Min.
Wilmer	10:52 A.M.	7 Min.	5 Min.
Pharmacy inside	11:04 A.M.	8 Min.	5 Min.
Pharmacy (box truck)	11:17 A.M.	8 Min.	5 Min.
Dispensary	11:30 A.M.	8 Min.	5 Min.
Clean up Trash Room	11:43 A.M.		
Lunch	12:00 Noon		
Woman's Clinic	1:00 P.M.	6 Min.	5 Min.
Harriet Lane	1:11 P.M.	10 Min.	5 Min.
Marburg	1:26 P.M.	6 Min.	5 Min.
General Operating Room	1:37 P.M.	23 Min.	18 Min.
Pharmacy inside	2:18 P.M.	8 Min.	5 Min.
Wilmer	2:31 P.M.	7 Min.	5 Min.
Dispensary	2:43 P.M.	8 Min.	5 Min.

Saturday, Sunday, and Holiday
Pickup Schedule

<u>AREA</u>	<u>DEPARTURE TIME</u>	<u>ROUND TRIP TIME</u>	<u>DUMP TIME AND CLEAN TRUCK TIME</u>
Harriet Lane	2:56 P.M.	10 Min.	5 Min.
Pharmacy (box truck)	3:11 P.M.	8 Min.	5 Min.
Engineering return tow motor	3:24 P.M.	8 Min.	5 Min.
Clean up Trash Room	3:27 P.M.		
		————— 252 Min.	————— 138 Min.

Scheduling

During the week of Monday, August 28, 1967 through Sunday, September 3, 1967, the proposed system was implemented and functioned effectively. The result is a saving of six man-days. The following is a proposed schedule of allocating the twelve man-days needed to provide trash removal service.

	<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>	<u>Saturday</u>	<u>Sunday</u>
	A.M. P.M.	A.M. P.M.	A.M. P.M.	A.M. P.M.	A.M. P.M.	A.M. P.M.	A.M. P.M.
Employee "A"	7:30-4:00	7:30-4:00	7:30-4:00	7:30-4:00	7:30-4:00	OFF	OFF
Employee "B"	8:00-5:00	8:00-5:00	8:00-5:00	8:00-5:00	8:00-5:00	OFF	OFF
Relief	← IN ANOTHER AREA →					7:30-4:00	7:30-4:00

Procedures

In areas with stationary trash trucks, the housekeeping personnel should continue bringing their floor's trash to their respective truck. In the Dispensary, Osler, Halsted, Brady, C.M.S.C., and Blalock Buildings, there is no convenient place to station a trash truck. Procedures in these buildings as documented in the "Present System" section of this report, should remain the same. The areas that deliver their own trash should continue to do so. These areas have no fixed time in which refuse is generated. To impose a schedule and remove their equipment would be detrimental to the operations of the area concerned.

G.O.R.

The Assistant Director of Nursing in charge of the General Operating Room has expressed some concern over:

- a) inadequacy of the present two scheduled pickups to always satisfy their need for trash removal;
- b) the heavy trash accumulation on Monday mornings;
- c) the "cleanliness" of the trash truck that makes the pickups in the G.O.R. area.

The Assistant Director feels that the amount of trash generated within the area is directly related to the number of operations performed. During the month of July, 1967, 17% of the operating days had sixty or more scheduled operations. On such days, a third pickup would have been appreciated. Under the proposed system, there is no allotted time for a third pickup of the G.O.R. area but when deemed necessary, Housekeeping should be notified and be prepared to render assistance to the trash crew to comply with the request.

To alleviate the heavy Monday morning accumulation, a Saturday and Sunday afternoon pickup of the G.O.R. area has been scheduled into the proposed system. It should be noted that the Assistant Director does not feel that a Saturday pickup is advisable at the present time because this would decrease the work available for the Housekeeping assistants who service the area.

Presently, the metal trash truck that is being used for the G.O.R. pickup is also being used to make the following pickups:

1. Osler and Halsted bottle trash
2. Canteen
3. Buttery
4. Bacteriology Laboratory
5. Pharmacy
6. General Operating Room.

This trash truck is infrequently washed, and when it is washed, no disinfectant is used.

In order to determine the "cleanliness" of this truck two sets of cultures were taken.

A) Set I

The metal truck was washed with soap and water; and nine different areas were swabbed. The truck then was employed to make a pickup of trash in the Canteen. After the truck was returned and emptied, another nine areas were swabbed. This first set of cultures revealed only the organism counts of the various areas.

Set I

After Wash

	<u>Number of Organisms</u>
1. Brown spot inside	Innumerable
2. Rubber bumper in front (= #13)	Innumerable
3. Control	Negative at 24 hours
4. Left rear wheel (= #20)	400
5. Right front wheel	10,000
6. Word "House" on back of truck	3 colonies
7. Liquid inside of truck	Innumerable
8. Right side of handle (= #17)	33 colonies
9. Rubber wrung (= #11)	21 colonies
10. Left front wheel	Innumerable

After Canteen Pickup

11. Rubber wrung	400 colonies
12. Left front rim of wheel	Innumerable
13. Rubber bumper in front	Innumerable
14. Bottom inside of truck	Innumerable
15. Word "House" on right side	2 colonies
16. Word "House" on left side	7 colonies
17. Right side of handle	Negative at 24 hours
18. Control	Negative at 24 hours
19. Right rear wheel	Innumerable
20. Left rear wheel	Innumerable

B) Set II

In order to determine the exact organisms that were present on the trash truck, a second set of cultures were taken at a random time during the day.

Set II

Area

Type of Organisms

1. Word "House" on left side
2. Word "House" on right side

Negative at 24 hours.

There was no growth on plates; but subculture and smears revealed:

3. Rubber wrung on front

- a) Clostridium welchii
- b) Staph Epidermidis
- a) moderate klebsiella
- b) moderate escherichia
- c) intermediate coliform bacilli
- d) moderate alpha streptococci
- e) 7 colonies of bacillus species
- f) moderate diptheroids

4. Left front wheel rim

- a) light bacillus species
- b) moderate diptheroids
- c) moderate micrococcus species
- d) light alpha streptococci

5. Left rear wheel rim

- a) light staph. epidermidis
- b) light streptococci
- c) light diptheroids
- d) light micrococcus species
- e) light streptococcus fecalis

6. Right front wheel rim

- a) escherichia coli
- b) klebsiella
- c) 5 colonies of flavobacterium
- d) 6 colonies of bacillus species
- e) light alpha strep.
- f) moderate micrococcus species
- g) moderate diptheroids
- h) moderate staphylococcus aureus

7. Control

Negative at 24 hours.

8. Rust spot on right front wrung

- a) heavy escherichia coli
- b) heavy escherichia species
- c) 40 colonies bacillus species
- d) light alpha strep
- e) light diptheroids
- f) light micrococcus species

<u>Area</u>	<u>Type of Organisms</u>
9. Inside bottom ($\frac{1}{2}$ " square)	a) 1 colony escherichia coli b) 6 colonies streptococai c) 10 colonies staph. epidermidis
10. Right side of handle	a) 1 colony bacillus species b) 2 colonies staphyloccus aureus

A disinfectant capable of killing the pathogenic organisms should be issued to the trash room. This disinfectant should be applied before each trip to the trash trucks which are taken above the basement level. All other trash trucks should receive at least a daily dosage of this disinfectant.

CONCLUSION

Results of this survey and analysis indicate a definite need:

1. to consider a contract revision in light of the present problems and future expansion;
2. to impose a schedule for area pickups;
3. to enforce the use of a disinfectant and aseptic techniques.

APPENDIX

August 1967

NEWITT 5557

POST #3

ADDITIONAL ORDER:

The trash truck will be logged in and out each time it makes a trip by the Guard.

Lt. Thacker

DAY	DATE	TIME OUT	TIME IN	GUARDS NAME
FRIDAY	8-4-67	3:50 PM	5:30 PM	Irill
ATURDAY	8-5-67	2 10 PM	3 35	Fitzhugh
Monday	8-7-67	12 40 PM	2 40 PM E.R.	Chalk
Tues	8-8-67	12 40 PM	2 45 PM E.R.	Chalk
Wed.	8-9-67	1 10 PM	3 50 PM	Chalk
Thurs.	8-10-67	12 10 PM	2 08 PM E.R.	Chalk
Fri	8-11-67	11 40 AM	1 30 PM	Fitzhugh
Sat.	8-14-67	11 45 AM	1 40 PM	Chalk
Sun	8-15-67	11 45 AM	1 40 PM	Chalk
Wed	8-16-67	11 40 AM	1 25 PM	Fitzhugh
Thurs.	8-17-67	11 55 AM	1 15 PM	Chalk
FRI	8-18-67	11 45 AM	1 25 PM	Willson
SAT	8-19-67	11 55 AM	1 50 PM	Roberto
MON	8-21-67	11 40 AM	1 35 PM	Fitzhugh
TUE	8-22-67	11 45 AM	1 55 PM	Fitzhugh
WED	8-23-67	2 50 PM	4 50 PM ^{2nd out}	Roberto + 1st hand
THUR	8-24-67	11 55 AM	2 05 PM	Chalk
FRI	8-25-67	11 25	1 30 PM	Fitzhugh
FRI	8-25-67	11 40 AM	4 PM	Thompson
Sat	8-26-67	11 40 AM	1 30 PM	Roberto
Sun.	8-28-67	11 45 AM	1 50 PM	Chalk
Tue.	8-29-67	12 00 NOON	2 05 AM	Chalk & Hammer
Wed.	8-30-67	11 40	1 55 PM	Fitzhugh
THUR.	8-31-67	11 45 AM	1 45 PM	Chalk

