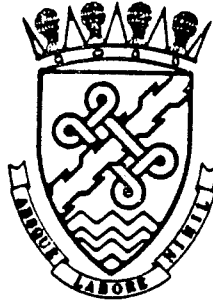


THE
REGIONAL
MUNICIPALITY
OF
HALTON



RESOLUTION NO. 370-83

DATE December 21, 1983

Moved by: W. Johnson

Seconded by: P. McLaughlin

{ THAT the services of Gartner Lee Associates Limited of Markham, Ontario, be retained to interpret the 1983 monitoring data and prepare the 1983 monitoring reports for the Regional Landfill Site in Burlington and the closed landfill located on the Fourth Line in Oakville, at a maximum cost of \$13,510, the services to run from January 1 to June 30, 1984.

THAT the services of Gartner Lee Associates Limited of Markham, Ontario, be retained for the period January 1 to December 31, 1984 to carry out sampling and associated field work for the 1984 monitoring programs at the Regional Landfill Site in Burlington and the closed landfill on the Fourth Line in Oakville, at a maximum cost for such services of \$14,040.

-added parameters suggested by Dr. Cherry.

"Peter Pomeroy"
REGIONAL CHAIRMAN

REGIONAL MUNICIPALITY OF HALTON

Report to The Chairman and Members of the
Planning and Public Works Committee

From The Director of Public Works

Date 1983 12 06

Report No. PW.229/83

RE 1983 AND 1984 MONITORING PROGRAMS, BURLINGTON,
OAKVILLE, AND HALTON HILLS (GEORGETOWN) SANITARY
LANDFILL SITES, FILE SWM BURL-05/83

RECOMMENDATION

1. THAT the services of Gartner Lee Associates Limited of Markham, Ontario, be retained to interpret the 1983 monitoring data and prepare the 1983 monitoring reports for the Regional Landfill Site in Burlington and the closed landfill located on the Fourth Line in Oakville, at a maximum cost of \$13,510, the services to run from January 1 to June 30, 1984.
2. THAT the services of Gartner Lee Associates Limited of Markham, Ontario, be retained for the period January 1 to December 31, 1984 to carry out sampling and associated field work for the 1984 monitoring programs at the Regional Landfill Site in Burlington and the closed landfill on the Fourth Line in Oakville, at a maximum cost for such services of \$14,040.

APPROVALS
BUS. DEV.
HEALTH
LAW
PERSONNEL
PLANNING
P.W.
SOC. SERV.
TREAS.
"JS"

REPORT

Regional Council recently passed the following resolutions:

- "1. THAT 1982 monitoring reports prepared by Gartner Lee Associates Limited dated August 1983, for the Regional Landfill Site in Burlington, dated September 1983 for the closed landfill site in Oakville, and dated September 1983 for the closed landfill site in Halton Hills (Georgetown) be adopted.

2. THAT copies of the monitoring reports be submitted to the Ministry of the Environment in compliance with conditions laid down by the Ministry for the operation of the Burlington landfill and for the post-closure care of the Oakville and Halton Hills (Georgetown) landfills.
3. THAT Regional staff be instructed to utilize the reports and the conclusions and recommendations contained therein as guidelines with respect to the operation of the Burlington landfill and the postclosure care of the Oakville and Halton Hills (Georgetown) landfills.
4. THAT the services of Gartner Lee Associates Limited of Markham, Ontario, be retained in the amount of \$10,000 to gather the necessary ground and surface water samples at the Burlington Landfill and the closed Oakville Landfill for the 1983 monitoring program reports.
5. THAT staff report back to Committee with respect to the Ministry of the Environment analysis of the monitoring of the three landfill areas in Halton.
6. THAT staff report back to Committee with respect to the parameter and program which Gartner Lee select as their indicator of leachate contamination at the Burlington site.
7. THAT staff report back on the program necessary to obtain a more complete chemical analysis of leachate entering the sewage system."

Reference can be made to reports PW.188/83 and C-11/83 for the recommendations leading up to these resolutions.

This report deals with resolutions 1-6 which relate to the monitoring of ground and surface waters and the identification of quality, volume, and movement of leachate on and under the landfills proper and their immediate environs.

Resolution 7 concerns matters external to the landfills, primarily the impact of leachate on sewage treatment facilities, and will be the subject of a further report early in 1984.

With respect to resolutions 2 and 5, copies of the 1982 monitoring reports were sent to the Ministry of the Environment in October, with a request for comments. A written response had not been received at the time of writing this report, however telephone conversations and a meeting with Mr. G. McCarty, the MOE's Senior Environmental Officer, Municipal & Private Abatement Section, indicates that the Ministry is in agreement with the conclusions and recommendations contained in the monitoring reports and is satisfied that the reports comply with the conditions of approval for operation of the Burlington landfill and comply with the post-closure requirements for the landfills in Oakville and Halton Hills (Georgetown). The MOE's analysis of the reports will be reported on in more detail early in 1984 after the Ministry's written response has been received.

The instructions contained in resolutions 3 and 4 are being carried out. Gartner Lee have been issued a purchase order for \$10,000 to complete the 1983 round of sampling and the 1984 Preliminary Utility Budget covers the various recommended improvements for 1984 at the three landfills.

With respect to resolution #6, reference can be made to the attached letter dated November 16, 1983 from Gartner Lee on their proposal for the 1984 monitoring programs. In addition to the previous range of parameters, the new parameters selected by Gartner Lee for 1984 are the diagnostic compounds reported by Dr. Cherry in the University of Waterloo's research into the Bayview Park Landfill, i.e. chlorobenzene, para-dichlorobenzene, and 1, 1, 1, trichloroethane. These compounds are felt to be likely indicators of leachate contamination in the groundwater system. The MOE laboratory has agreed to test for these parameters free of charge, which will mean a considerable savings because if the testing for the three new parameters were to be done in private laboratories the added cost could run to \$5,000 or more for the year.

Gartner Lee Proposals for 1983 Report and 1984 Sampling

The proposals are attached.

The first proposal covers the completion of testing, data interpretations and preparation of reports by the end of June, 1984 for the 1983 monitoring programs at the active Burlington landfill and the closed Oakville landfill. Gartner Lee's cost estimate for this work and the production of six copies of the report is \$13,510. We have requested 12 copies of the final report and are advised that this will not change the estimated cost.

In keeping with the recommendation in the 1982 monitoring report, Regional staff will do the sampling at the closed landfill in Halton Hills and retain the test data for several years prior to the issuance of another monitoring report. The MOE, as noted above, are satisfied with this recommendation but they have not yet advised of the required frequency of reporting.

The second proposal is for sampling/testing work and associated field work between January 1 and December 31, 1984 for the 1984 monitoring programs at the Burlington and Oakville landfills. Three new parameters will be tested for at the Burlington landfill, along with the parameters that have been tested for in prior years. The new parameters should enable Gartner Lee to more accurately delineate the extent of any leachate plume.

The second proposal includes sampling the 14 new monitors that were installed this Fall at the Burlington landfill. The data from the 14 new monitors would be used to assess the background water quality in the area proposed for continuation of the site.

Gartner Lee's cost estimate in the second proposal for the 1984 sampling is \$14,040.

Please note, that the completion of testing, the data interpretation, and the report writing for the 1984 programs will be done in the first six months of 1985. A further proposal and approval from Council will be necessary to carry out the report writing phase of the 1984 programs.

1984 Budget

The costs estimated for expenditures in 1984 for the 1983 reports and sampling for the 1984 monitoring programs come to a total of \$27,550.

The total request in the 1984 Utility Budget was \$30,000.

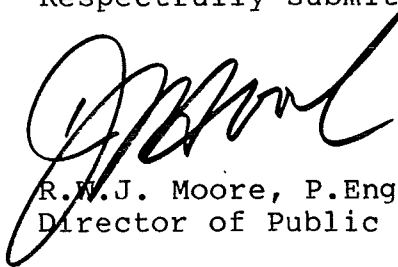
Conclusion

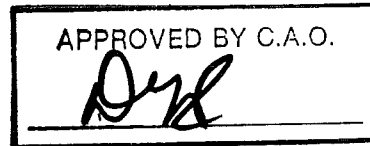
We are satisfied to recommend acceptance of the two Gartner Lee proposals in a total amount of \$27,550.

We are recommending Gartner Lee to you, rather than obtaining any further proposals, not only because they are one of the recognized leaders in the field of hydrogeology, but also because of the extensive and significant knowledge of the details of our landfills that they have accumulated over the years. There is a substantial degree of continuity in

the Gartner Lee proposals because the same senior personnel who have been responsible for the monitoring in the past will be available to do the work in 1984. We believe, as well, that the continued retention of Gartner Lee will ensure that a consistent approach is developed and long term trends evaluated as part of the programs. Finally, they are the hydrogeological firm providing hydrogeological advice for the Interim Waste Disposal Plan 1983.

Respectfully submitted,


R.W.J. Moore, P.Eng.
Director of Public Works



GNW:sw



**Gartner
Lee
Associates Limited**

Consulting
Engineering
Geologists and
Hydrogeologists

Toronto - Buttonville Airport ■ Markham, Ontario ■ L3P 3J9 ■ 416-477-8400
Telex - 06-986278

November 16, 1983

The Regional Municipality of Halton,
P.O. Box 7000,
1151 Bronte Road,
Oakville, Ontario.
L6J 6E1.

Attention: Mr. D.J. Corbett, P.Eng.

Dear Sirs:

Re: Proposal for Interpreting the 1983 Monitoring Data
and Preparing the 1983 Monitoring Reports for the
Burlington and Oakville Landfills
GLAL 2006-H

We are pleased to submit our cost estimates for preparing the 1983 Burlington and Oakville Monitoring Reports. These costs are in addition to the \$10,000 already authorized for sample collection and related field work to be completed by December 31, 1983 (P.O. 56063).

The tasks required to complete the 1983 monitoring programs include; data compilation, data interpretation, report writing and editing, drafting, typing, production of draft reports, one draft review meeting and production of the final report (six copies). This work will be carried out between January 1, 1984 and June 31, 1984. Figures 1 and 2 (attached) illustrate the complete 1983 and 1984 sampling and reporting schedules for the Burlington and Oakville landfill monitoring programs.

Table 1 (attached) provides a breakdown of estimated costs for interpreting the 1983 monitoring data and preparing the 1983 monitoring reports. These costs are based on our estimated 1984 fee schedule (1983 fee schedule plus 5%). Time has been budgeted for attendance of the project manager at one meeting to review the draft reports. If additional meetings are required then these will be billed as extras. As per company policy, monthly invoices will be issued for work completed.

We trust the information in this letter meets your present needs. Please call if you require further information.

Yours very truly
GARTNER LEE ASSOCIATES LIMITED



R.C. Dickin, M.Sc.
Senior Hydrogeologist

RCD:dg

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BURLINGTON

Landfill Monitoring Program

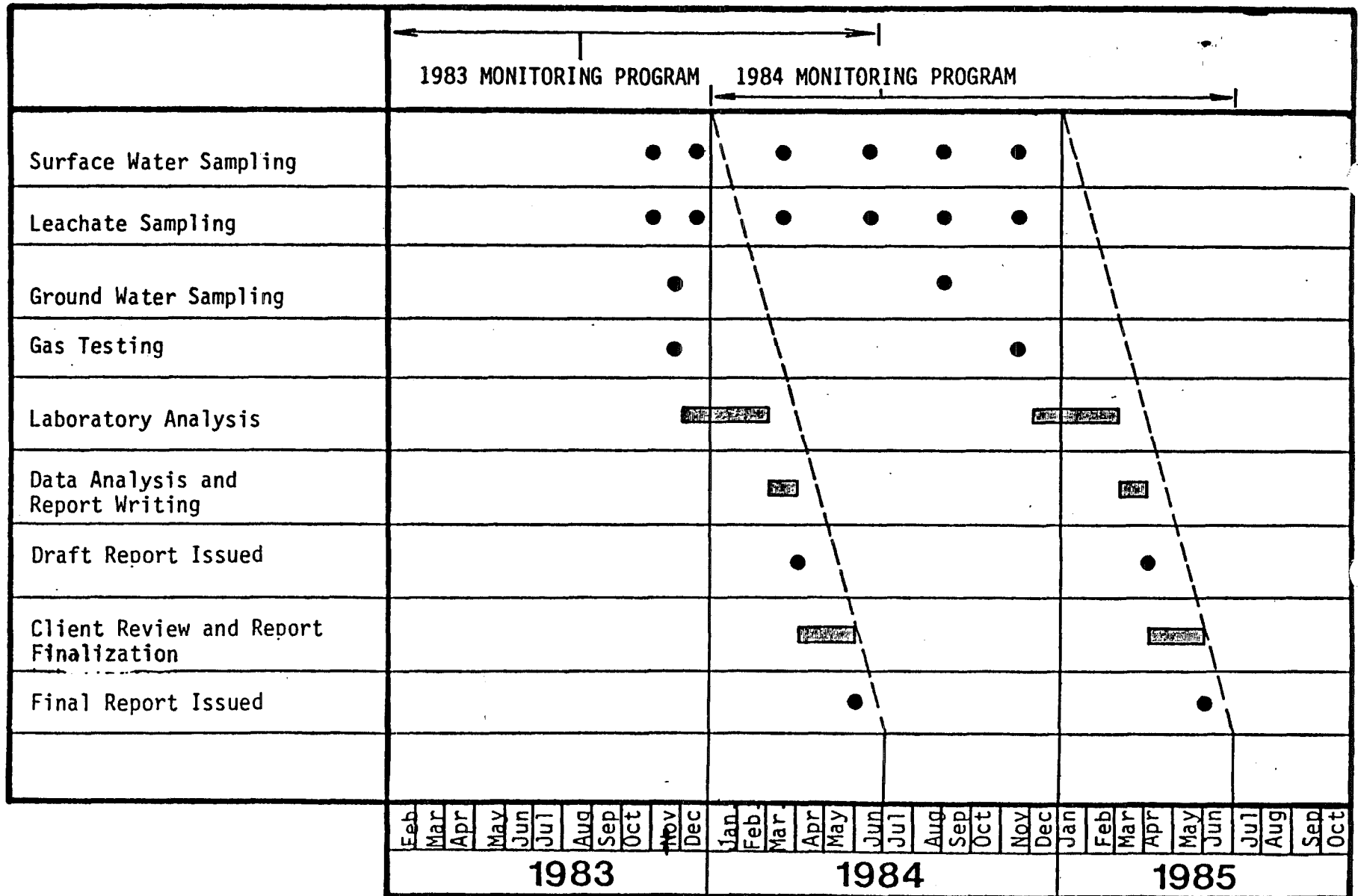


FIGURE 2:

OAKVILLE Landfill Monitoring Program

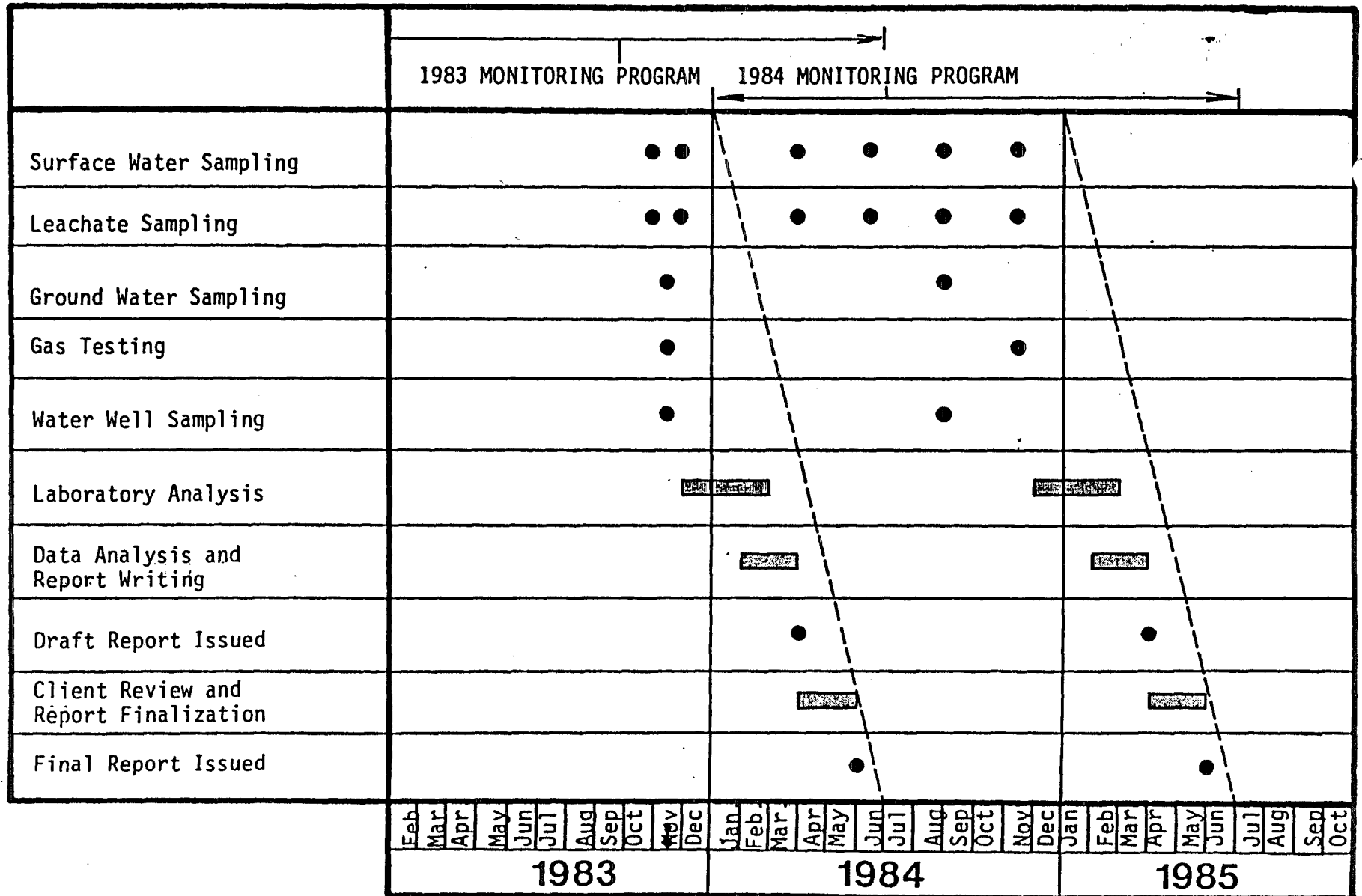
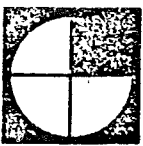


Table 1: COST ESTIMATES TO INTERPRET THE 1983 MONITORING DATA AND TO PREPARE THE 1983 MONITORING REPORTS FOR THE BURLINGTON AND OAKVILLE LANDFILLS

TASK	PERSONNEL	RATE	BURLINGTON		OAKVILLE	
			Hrs.	Cost	Hrs.	Cost
<u>Fees:</u>						
Project control, report editing	Principal-in-Charge	95	5	475	5	475
Project Management, data interpretation report writing, and one meeting	Project Manager	61	40	2440	40	2440
Data compilation	Field Geologist	39	15	585	15	585
Drafting and report production (6 copies of each report)	Draftsman	44	35	1540	35	1540
Typing	Typist	29	35	1015	35	1015
<u>Disbursements:</u>						
Photocopying, drafting supplies, report production, telephone, delivery charges, travel etc.				700		700
TOTALS				\$6,755		\$6,755
GRAND TOTAL				\$13,510		

- 140 -



**Gartner
Lee
Associates Limited**

Consulting
Engineering
Geologists and
Hydrogeologists

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Telex - 06-986278

RECEIVED

21 NOV. 1983

HALTON REGION
PUBLIC WORKS

November 16, 1983

The Regional Municipality of Halton,
P.O. Box 7000,
1151 Bronte Road,
Oakville, Ontario.
L6J 6E1.

Attention: Mr. D.J. Corbett, P.Eng.

Dear Sirs:

Re: Proposal for Sampling and Associated Field Work for
the 1984 Monitoring Programs at the Burlington and
Oakville Landfill Sites.
GLAL 2007-H

We are pleased to submit cost estimates and scheduling information for the above-mentioned sampling programs. This work will be carried out between January 1, 1984 and December 31, 1984. Figures 1 and 2 (attached) illustrate the complete 1983 and 1984 sampling and reporting schedules for the Burlington and Oakville landfill monitoring programs.

The tasks involved in the 1984 sampling programs are listed below;

- Burlington - surface water sampling and flow measurements
(4 times annually)
- leachate sampling (4 times annually)

- Burlington - ground water sampling and water level
(cont'd) measurements (once annually)
- gas measurements (once annually)
- Oakville - surface water sampling and flow measure-
ments (4 times annually)
- leachate sampling (4 times annually)
 - ground water sampling (once annually)
 - gas measurements (once annually)
 - residential water well sampling (once
annually carried out by Regional staff)
 - ground water level measurements
(4 times annually)

The monitoring locations, sampling frequencies and analytical parameters for the Burlington and Oakville Landfills are listed on Tables 1 and 2 attached. Note that we have included sampling the 14 new monitors in the Burlington site continuation area. This would be done as part of the 1984 monitoring program in order to assess background water quality in this area. We have also recommended testing the leachate and all ground water samples for chlorobenzene, para-dichlorobenzene and 1, 1, 1, trichloroethane. These are the three chlorinated organic compounds mentioned as leachate plume indicators in Dr. J. Cherry's report on the Bayview Landfill. Observations of general site conditions and any leachate seepages will be made during site visits.

Table 1 (attached) provides a breakdown of estimated costs for carrying out the 1984 sampling and associated field work for the 1984 monitoring programs at the Oakville and Burlington Landfills. These costs are based on our estimated 1984 fee schedule (1983 fee schedule plus 5%). We have assumed that the MOE will continue to carry out all the laboratory analyses at no charge. We have not included any costs for meetings. If meetings are required, they will be billed as extras. As per company policy, monthly invoices will be submitted for work completed.

Page 3,
The Regional Municipality of Halton,
November 16, 1983

The cost estimates in this proposal do not include fees or disbursements for data interpretation or report preparation. These additional tasks will be carried after January 1, 1985 and will require the issuance of another purchase order. We cannot estimate these additional costs at this time because our 1985 fee schedule has not been determined yet.

We trust the above information meets your present needs. Please call if you have any questions.

Yours very truly
GARTNER LEE ASSOCIATES LIMITED

Rob Dickin

R.C. Dickin, M.Sc.
Senior Hydrogeologist

RCD:dg

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FIGURE 2:

OAKVILLE Landfill Monitoring Program

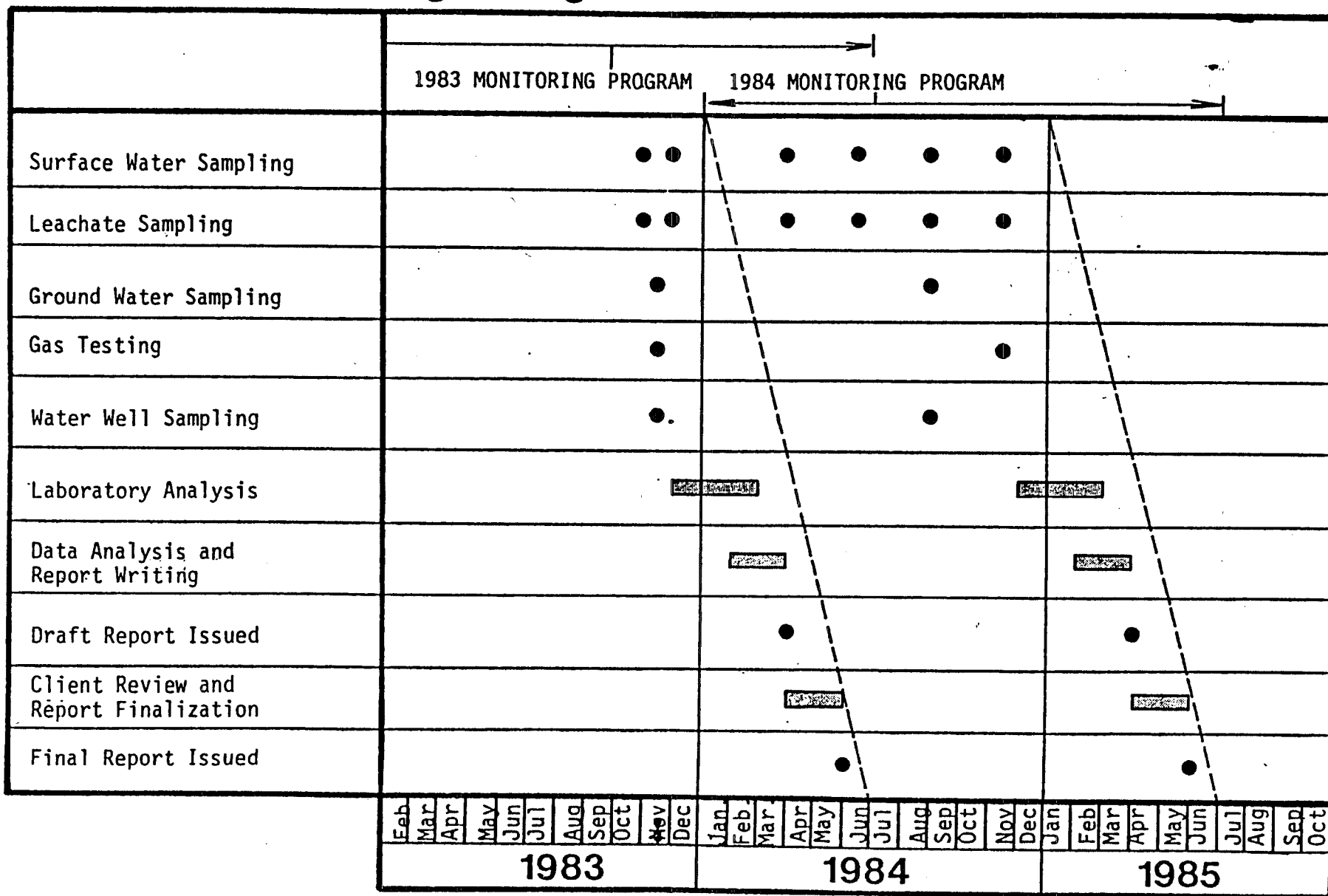


TABLE 1: COST ESTIMATES FOR SAMPLING AND ASSOCIATED FIELD WORK FOR THE 1984 MONITORING PROGRAMS AT THE BURLINGTON AND OAKVILLE LANDFILL SITES

BURLINGTON AND OAKVILLE LANDFILL SITES						
TASK	PERSONNEL	RATE	BURLINGTON		OAKVILLE	
			Hrs.	Cost	Hrs.	Cost
<u>Fees:</u>						
Project Control	Principal-in-Charge	95	4	380	4	380
Project Management and Site Visit	Project Manager	61	15	915	15	915
Field Work including well development, sampling, flow and gas measurements, as well as data analysis in office	Field Geologist	39	120	4,680	100	3,900
Administration and typing	Typist	29	15	435	15	435
<u>Disbursements:</u>						
Travel engineering disbursements, telephone, delivery charges				1,000		1,000
TOTALS				\$7,410		\$6,630
GRAND TOTAL						<u>\$14,040</u>

-941-