



Consumat Sanco Inc.

100 Hall St. • Suite 301C • Box 6 • Concord, NH 03301 • (603) 225-0579 • Fax (603) 225-0967

December 18, 1991

RA 1/2/91

Mr. Kevin Hopkins
Waste Management Division
New Hampshire Department of Environmental Services
Health and Human Services Building
6 Hazen Drive
Concord, New Hampshire 03301-6509



Re: Consumat Sanco Phase III Construction

*Log # 201-91
12/30/91*

Dear Kevin:

The following is a summary of construction monitoring activities in finalizing the construction of Consumat Sanco's Stage 1 - Phase III area. As you know, we are about to begin using Phase III of our landfill in early 1992. The schedule of Phase III utilization is influenced by the landfill relocation project which is currently underway where solid waste from the relocation area is being transported to our Phase II area.

Most of the construction for cells 2 and 3 in Phase III was accomplished during the 1990 construction season. The following were the major participants in this construction:

Design - GZA GeoEnvironmental

Quality Control/Quality Assurance - GZA GeoEnvironmental

Principal Earthwork - Consumat Sanco, Inc.

Liner Installation - Resicon Containment, Inc.

Construction of Cell 1 of Phase III had been previously accomplished in 1989 by the same parties except that the liner had been installed by National Seal Company.

To date, Consumat Sanco's measure of performance for the liner installation for all three cells of Phase III has been based on the amount of water collected from the secondary liner. We recognize that, although Consumat Sanco's ongoing monitor of liner performance has been the monitoring of the primary liner function, the actual protective performance of our complete liner system is a function of both the primary and secondary geomembrane liners that have been installed in the construction of the landfill.

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Since the construction of cell 1 and the additional construction of cells 2 and 3, Consumat Sanco has monitored the flow of water to the secondary liner by physically measuring the amount of water pumped from the secondary liner sump on a daily basis. This monitoring continued after construction of cells 2 and 3 and the connection of the secondary leachate collection system from those cells to that of cell 1.

Consumat Sanco's target standard of performance has been based on leakage measurement rates stipulated in the New Hampshire Solid Waste Management Regulations (Env-WM 2106.05 (g)). Prior to the construction of cells 2 and 3, the monitoring of flow rates in cell 1 showed results that were considerable below the target standard of performance which Consumat Sanco has assumed to be the reporting limit (25 gallons per acre per day) set in Env-WM 2106.05 (g). However, after connection of the Cell 2 and 3 leachate collection system to Cell 1, monitoring showed that flow rates were above the target rate.

Resicon Containment, Inc. (Resicon) was contacted and advised of the problem. Evaluation of flows and the liner installation was then undertaken by Resicon. A target of investigation was selected to determine any cause of flow from the primary liner to the secondary liner.

After initial surface review of each cell in locations where a temporary head of liquid could exist over the top of the primary liner, a decision was made to isolate and measure the flow rates from each of the Phase III cells so as to independently determine which of the cells were contributing to the exceedance of the target flow rate. After field modification by Resicon to isolate each cell, monitoring showed that the flow rate in Cell 1 was below the reporting level but that the flow rate in Cells 2 and 3 were above that level.

The next phase of the investigation consisted of uncovering the primary liner in those areas where some liquid head could be expected on the top of the primary liner. Additionally, sand cover over other portions of the primary liner in Cells 2 and 3 was removed to verify the flow pattern over the primary liner and to determine that there was no unforeseen water accumulation over any other portion of the primary liner outside of the collection pipe area. It was found that general flow of liquid over the primary liner was as expected and that the source of any penetrating flow to the secondary liner was more than likely in the pipe area.

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Starting from the area in each cell nearest the dividing berm between cells; sand, permeable fabric and geonet was removed so that the liner and, particularly, liner seams could be evaluated and tested. Flooding of the primary liner in the investigation area was used to evaluate liner performance in each of the uncovered areas. Salt spiking in flooded areas was attempted to determine any increase in the conductivity of secondary liner flow due the individually flooded areas. This was an attempt to try to isolate areas where penetrative flow might be occurring. In addition to the evaluation of primary liner floor areas, all locations where designed pipe penetration of the liner occurred were excavated and evaluated. Vacuum testing of all seams in the uncovered areas was undertaken by Resicon in searching for any source of water flow to the Phase III secondary liner.

Three sources of flow were found during the investigation that were repaired by Resicon. One of the holes in cell 2 appeared to be associated with damage during construction; while the other two (1 in cell 2 and 1 in cell 3) were due to joint construction of the primary liner.

Subsequent monitoring of each cell has shown that the rate of flow from the secondary liner has decreased slowly over time to levels that are currently below the reporting level. Reconnection of all cells to the common leachate collection system was then accomplished by Resicon and monitoring of flow rates by Consumat Sanco has continued. Currently, the flow rate experienced in Phase III is about 20 gallons per acre per day.

We believe that the liner installation for each cell in Phase III is well within the standards for such installations. The rate of flow through the double geomembrane liner system is well within industry standards for such installations.

We believe that our monitoring of flow on the secondary liner serves as a good and conservative measure of overall liner performance and we will continue to monitor this flow rate prior to and during the normal operation of Phase III. We also anticipate that recorded levels will further decrease with installation of the buffering capacity of the solid waste placed into the Phase III cells. In addition, eliminating the liner dams installed for this monitoring process will eliminate a significant portion of the liquid head currently on certain sections of the Cell 2 and 3 areas.

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Should you have any questions on this issue, please don't hesitate to give me a call.

Respectfully,

A handwritten signature in black ink that reads "Leo R. Larochelle". The signature is written in a cursive, flowing style.

Leo R. Larochelle P. E.

LRL/hs
Attachments

cc: Jim Berg, NHDES
Ron Cook, Consumat Sanco
Roy Sanborn, Consumat Sanco