October 9, 1997
Project 84556-003.000

Mr. Gerard Burke
Bureau of Construction Services
Division of Hazardous Waste Remediation, NYSDEC
50 Wolf Road
Albany, NY 12233-7010

Re: Taylor's Lane Compost Site
Certification Report
Project No. 94-12

Dear Mr. Burke:

This correspondence will serve to certify that, to the best of our knowledge and belief, the prepared subgrade, gas venting layer, Flexible Membrane Liner (FML), Barrier Protection Layer (BPL), Topsoil, and Storm Drain Rehabilitation portions of the remedial construction work at the Taylor's Lane Compost Site has been constructed in accordance with the applicable documentation referenced in this report. The closure construction is further discussed below as part of this Certification Report.

The following documents describe the Closure of the Taylor's Lane Compost Site:

- Construction Plans for the Closure of the Taylor's Lane Compost Site, prepared for the Village of Mamaroneck by Wehran-New York, Inc., dated March 1995, revised May 1995.

- Final Engineering Design Report for the Closure of the Taylor's Lane Compost Site, prepared for the Village of Mamaroneck, prepared by Wehran-New York, Inc., dated March 1995, revised May 1995.

- Addendum No. 1 — Closure of the Taylor's Lane Compost Site, prepared for the Village of Mamaroneck by Wehran-New York, Inc., dated June 27, 1995.

- Final Bid documents and Technical Specifications for the Closure of the Taylor's Lane Compost Site, prepared for the Village of Mamaroneck by Wehran-New York, Inc., dated March 1995, revised May 1995.

- Recycled Glass Re-Use Plan for the Taylor's Lane Compost Site, prepared for the Village of Mamaroneck by Wehran-New York, Inc., dated November 1994.

In accordance with 6 NYCRR Part 360, this report is provided for the construction of the gas venting layer, FML, and BPL of the Taylor's Lane Compost Site. Components of

construction included prepared subgrade, a gas venting layer consisting of either geotextile overlain by geonet or recycled glass overlain by geotextile, 40 mil FML, and a 24-inch BPL with perforated corrugated polyethylene pipes.

The following are the significant parties involved Taylor Lane Site remediation:

- Owner: Village of Mamaroneck (Village)
  169 Mt. Pleasant Avenue
  P.O. Box 369
  Mamaroneck, New York 10543
  Mike Blau, Village Manager

- Engineer: EMCON /Wehran-New York, Inc.
  Crossroads Corporate Center
  One International Blvd.
  Mahwah, New Jersey 07495
  Mark Swyka, Project Manager

- General Contractor: Breco Mechanical Group, Inc.
  201 Saw Mill River Road
  Yonkers, New York 10701
  Mark SanAngelo, Project Manager

- Liner Contractor: L.A. Solomon Inc.
  150 River Road Bldg. A-4
  Montville, New Jersey 07045
  Dave Ignatuck, Project Manager

In accordance with 6 NYCRR Part 360, Appendix E contains resumes of L.A. Solomon and Wehran personnel involved with the construction, observation, and quality assurance for the project. All Wehran personnel involved in the observation and QA/QC of the final cover project have previous experience with FML projects and were qualified to ensure construction in accordance with the project Construction Plans, Technical Specifications, and NYSDEC requirements.

MODIFICATIONS TO DESIGN

Minor modifications to the approved plans were made during construction:

- The Limit of Final Cover (LFC) was modified from the location shown within the approved design. These modifications were made in response to local concerns for the visual impact of tree removal across the site, and as a result of

encountered boulders. The locations where the LFC was modified are at the northwest corner, north side, and east side of the site. In these areas, no waste was observed.

- A 12-inch layer of recycled glass, overlain by geotextile, was installed as gas venting layer on the east side of the site. Due to insufficient quantities of recycled glass available at the time of construction, geotextile, overlain by geonet, was installed as gas venting layer on the west side of the site. Geotextile, overlain by geonet, was utilized to expedite construction of geocomposite drain. This method also resulted in a reduction in project cost.

- The 24-inch HDPE drainage pipe at the south corner of the site was not fused in the field. Instead, a 24-inch HDPE solid pipe was factory-welded with a corrugated end section. The weld was both on the inside and outside to ensure watertightness. Beyond the limits of the liner, the pipe was coupled with a nyoplastic, watertight coupling. The pipe was booted with FML as in the design specifications. This modification meets the original design intent.

- The non-destructive air pressure testing was revised to meet current state and industry standards. The new standards, a maximum 4 psi pressure decay over 5 minutes, are in conformance with Standard GRI-GM6 and therefore meet NYSDEC Hazardous Waste Closure Specifications.

DRUM CHARACTERIZATION AND REMOVAL

Existing on-site drums remaining from prior remedial investigation activity were characterized and disposed in accordance with the construction documents. Drum characterization was performed by Clean Venture of Elizabeth, New Jersey. Clean Venture sampled the on-site drums on October 4, 1995. Testing results are included in Appendix K. Based upon the results of the in-field sampling, the contents of 8 drums required removal and disposal. The remaining drums were found to be empty and were disposed of separately as MSW. The 8 drums were removed and disposed of by Cycle Chem of Elizabeth, New Jersey, on April 10, 1996. Removal was observed by representatives of EMCON/Wehran-New York, Inc. and the Village. Removal of all drums was found to be in accordance with the requirements of the specifications.

PREPARED SUBGRADE

All monitoring wells and piezometers within the limit of final cover were abandoned, with the exception of MW-14S, MW-14M, MW-14D, and MW-15D. Breco's subcontractor, Moretrench American Corp. of New Jersey, performed the abandonment of all wells

except MW-15S. Breco abandoned MW-15S after the well was exposed, due to excavation to proposed subgrade elevation. Monitoring Well Abandonment Reports are presented in Appendix A.

The existing cover soils were regraded to provide a uniform surface for gas venting layer and subsequent FML placement. Slopes were typically graded to a minimum grade of 2 percent prior to gas venting layer installation. The exception to this grading was an area on the northwest side of the site, where the slope did not meet 2 percent. This area was determined to not affect the site drainage significantly. In this area, additional BPL soil was placed to bring the final BPL and topsoil grades to a minimum of 2 percent. The subbase was inspected and approved by L.A. Solomon and EMCON/Wehran-New York, Inc.. Subgrade acceptance forms are presented in Appendix E. Subgrade preparation was found to be in accordance with the requirements of the plans and specifications.

GAS VENTING LAYER

The gas venting layer consisted of either broken recycled glass or geosynthetics. The installation of the gas venting layer is described subsequently.

Recycled Glass

A 12-inch layer of recycled glass was installed as a gas venting layer on the east side of the site. The recycled glass has a minimum hydraulic conductivity of 1×10^{-3} cm/sec. The glass was received from the Westchester County Recycling Center and results of the glass analyses are presented in Appendix B. Geotextile installed overlying the recycled glass consisted of Amoco 4516 filter fabric. Due to insufficient quantities of Amoco 4516 filter fabric available at the time of construction, Amoco 4504 filter fabric overlain by Tensar NS1405 geonet, was installed above the recycled glass in a small area, less than 1/10-acre. Quality assurance documentation for these materials is presented in Appendix D. Filter fabric and geonet panels were installed as described in the Plans and Specifications. Gas collection pipes consisting of ADS 6-inch diameter, perforated corrugated polyethylene pipe was installed below the recycled glass layer. Installation was observed by EMCON/Wehran-New York, Inc. and found to be in accordance with the requirements of the plans and specifications .

Geosynthetics

For the remaining portion of the site, the gas venting layer consisted of Amoco 4504 filter fabric, overlain by Tensar NS1405 geonet. This configuration was installed as gas venting

layer on the west side of the site. Quality assurance documentation for these materials is included in Appendix D. Geocomposite drain was shown for use as the gas venting layer on the construction plans. Geotextile, overlain by geonet, was utilized to expedite construction. Filter fabric and geonet panels were installed as described in the Plans and Specifications. Gas collection trench consisting of Amoco 4504 filter fabric underlying subangular stone was installed prior to the gas venting layer. ADS 6-inch diameter, perforated corrugated polyethylene gas collection pipes were installed within the subangular stone. The subangular stone gradation is presented in Appendix C. Installation was observed by EMCON/Wehran-New York, Inc. and found to be in accordance with the requirements of the plans and specifications.

Passive gas vents were installed around the landfill at the high points of the gas collection pipes and around the site perimeter. Installation was observed by EMCON/Wehran-New York, Inc. and found to be in accordance with the requirements of the plans and specifications.

FLEXIBLE MEMBRANE LINER INSTALLATION

The 40 mil, polyethylene flexible membrane liner (FML) manufactured by GSE was installed by L.A. Solomon. The liner was installed as described in the Construction Plans and Specifications, and as depicted on the attached Record Drawing, Appendix J. The Record Drawing includes approximate locations of destructive samples and pipe boots, based on field records of the installation.

Liner placement consisted of unrolling FML panels, seaming adjacent panels, and performing quality control testing on welded seams. Quality assurance of the FML was performed by EMCON/Wehran-New York, Inc., as presented in Appendix E of this report. Each lot of raw material received was tested for conformance with L.A. Solomon's specifications prior to sheet manufacture. Manufactured FML sheets were tested for the properties listed in the specifications and inspected for malformities in accordance with the specifications. No sheets were used that did not meet these specifications.

Quality control during construction was performed by L. A. Solomon technicians and observed by EMCON/Wehran-New York, Inc. Imperfections observed on the deployed liners were marked for repair in the field. Observation consisted of both peel and direct shear testing of test-strip seams, visual inspection of all panels, visual inspection of all panel seaming, and vacuum or air channel pressure testing of all seams. Tables in Appendix E present summaries of the non-destructive testing results, and specific notes regarding this testing are presented at the end of the tables. A "walk-through" was performed by EMCON/Wehran-New York, Inc. field observers upon completion of the vacuum and air channel pressure testing to confirm that all Quality Control testing was performed and clearly marked on the liner.

Subsequent to the completion of the FML construction, EMCON/Wehran-New York, Inc. verified patches, pipe boot sizes and locations, and test lengths. In addition, vacuum and air pressure tests that were inadvertently omitted from field observers' field logs were included at the bottom of the form in which the test may have been omitted, upon field verification.

Note that deployment lengths are measured prior to trimming, key-in and cross-seaming, and should not be used to determine seam lengths. Seam lengths presented are based on EMCON/Wehran-New York, Inc. field measurements. A second "walk-through" was performed specifically on seams which presented total lengths tested less than the seam length, to assure that all the liner seams were completely tested.

A total of 25 samples were removed from completed seams for destructive testing. The EMCON/Wehran-New York, Inc. Geosynthetics Laboratory tested 5 strips from each destructive sample for peel and shear strength testing as outlined in the Technical Specifications. A summary of the destructive test results performed by the EMCON/Wehran-New York, Inc. Geosynthetics laboratory may be found in Appendix E. All destructive sample results met the specification requirements.

All imperfections identified by both L.A. Solomon and EMCON/Wehran-New York, Inc. were repaired by L.A. Solomon in accordance with the Technical Specifications. The results of the quality control testing are included in Appendix E.

Installation and in-field quality control were continuously observed by EMCON/Wehran-New York, Inc. Based on these observations FML installation was by EMCON/Wehran-New York, Inc. and found to be in accordance with the requirements of the plans and specifications.

BARRIER PROTECTION LAYER

Upon completion of the FML, the drainage system was installed. The drainage system consisted of ADS 4-inch diameter, perforated corrugated polyethylene pipe surrounded by subangular stone. The subangular stone was enveloped by Amoco 4504 filter fabric. The subangular stone gradation is presented in Appendix C. The drainage pipes were connected to the surface runoff catch basin, at the south end of the site. Barrier protection layer soil was placed in a 2-foot lift over the FML. BPL soil was delivered to the site from three sources: Ajay (Mt. Vernon), Durante (Flushing), and Star (Brooklyn). The gradation of the BPL was tested at a frequency of one test per 5,000 CY. At an area on the northwest side of the site, additional BPL was placed, to bring the BPL grades to a minimum of 2 percent. The gradation results are generally in conformance with the Technical Specifications and accepted by EMCON/Wehran-New York, Inc.. BPL gradation results are presented in Appendix F.

During site visits by EMCON/Wehran-New York, Inc. and NYSDEC representatives on Monday, November 6, 1995, and Thursday, November 9, 1995, the BPL soil supplied to the site by Ajay Trucking from a stockpile in Mt. Vernon, New York was observed to contain unsuitable materials. Observations of material in the stockpile at the Ajay Trucking site revealed the presence of additional unsuitable material.

Breco Mechanical was directed not to place material supplied from the Ajay Trucking site, Mt. Vernon, New York, in direct contact with the FML at the Taylor's Lane site. The Ajay soil was observed to be adequate for use as the BPL; however, the occasional presence of metal observed in the Ajay soil rendered this material unsuitable for direct contact with the FML. Material from the Durante and Star sites was observed to be suitable for direct contact with the FML. The Ajay material was found to be acceptable for use as a second soil lift, and was placed above the Durante and Star material. The Ajay soil in contact with the FML was allowed to remain in-place, since its removal may have caused more damage than leaving the material in-place.

Since this direction, Breco placed material from the Durante and Star sites in a 1-foot thick lift over the FML. The material supplied from the Ajay Trucking site was then been placed in a second 1-foot lift. Using this fill progression, a 2-foot soil thickness was obtained. Personnel from Breco and EMCON/Wehran-New York, Inc. observed the soil placement to verify that Ajay material was not placed in direct contact with the FML. Depth was controlled by staff gauges marked at 2-foot. All barrier protection placement was observed and approved by EMCON/Wehran-New York, Inc.

FRENCH DRAIN

Initial Installation

A french drain was installed along the north-western side of the site, to improve drainage to protect properties adjoining the site. The drain consisted of 3-foot wide geocomposite drain material covered by 1-foot of topsoil. The grades of the drain were modified slightly as to not damage a large tree on the adjoining Markowitz property. The modification raised the grade at station 1+70 by 12 inches, while the grades at either end of the drain remained the same. The drain was completed including topsoil and seed by April 26, 1996. Installation was observed by EMCON/Wehran-New York, Inc. and found to be in accordance with the requirements of the plans and specifications.

Spring 1997 Modifications

The french drain system installed along the stone wall on the Markowitz property and the Weinstein property, was initially intended to stabilize these yards under average rainfall conditions. It was not designed to maintain the yards in a dry state regardless of rainfall or groundwater conditions. Unusual rainfall and groundwater conditions were encountered which the adjacent homeowners found to be unacceptable. Further, previously unidentified buried drainage piping in the yard of Weinstein was brought to the Village's attention. In addition, after removal of a tree stump at the fence near the Markowitz yard and concurrent disruption of the french drain in this area, the properties of Markowitz and Weinstein had been continually wet.

Drainage improvement work was performed in Weinstein property with the installation of a trench drain below the french drain, constructed with perforated pipe, and surrounded by crushed stone and fabric. The trench drain was constructed from a point near the porch of the Weinstein residence up to a distance of 100 feet, from where the pipe was continued to the catch basin in the Markowitz yard via a buried solid pipe through the Markowitz property. The newly identified drainage pipes were also connected to this drain.

On the Markowitz property, local installation of a gravel drain was constructed in the area which was found to be continually wet. A perforated pipe buried in the gravel drain was aligned on top of the solid pipe in the same trench and connected with it near the catch basin. In addition, the Markowitz yard was regraded seeded, and the driveway, damaged during stump removal, was resurfaced.

The drainage improvement work in Weinstein and Markowitz properties was completed in May 1997, and was incorporated to the Original Contract of the Closure of Taylor's Lane Compost Site with Change Order No. 2. A copy of the Change Order No. 2 submitted to the Village is included in Appendix H to this report. All drainage improvement work was observed by EMCON/Wehran-New York, Inc. and found to be in accordance with the plans and specifications.

TOPSOIL AND SEED

A 6-inch layer of topsoil was placed over the Barrier Protection Soil. This soil was obtained for Alfredo Nursery's Labriolla composting yard. The soil, called Alfredo Blended Topsoil, was manufactured by mixing soil with mulch. The soil met the required specifications. Test results are presented in Appendix G. Spreading of topsoil was completed on May 11, 1996.

On May 22, 1996, Old Oak Nurseries spread a 50/50 mix of Kentucky bluegrass and perennial rye seed was spread over the entire site. A 15-15-15 fertilizer was also spread

on the site with the seeds. After the seed and fertilizer were placed, a thin layer of hay was placed over the site to protect the seeds until germination.

Visual observation of the site in the spring of 1997 showed that seed germination and vegetation establishment had been inadequate. Therefore re-seeding was performed by the contractor. Breco performed this work on May 29, 1997. The seeding was observed by EMCON/Wehran-New York, Inc. and found to be in accordance with the plans and specifications.

STORM DRAIN REHABILITATION WORK

Work As Specified In The Technical Specifications

The storm drain improvement work consisted of replacing two catch basins along Taylor's Lane, replacing culvert pipe between and beyond these catch basins, and installing an outlet protection structure. This work was completed in accordance with the Technical Specifications. During excavation for the east side catch basin and the excavation for culvert across Taylor's Lane, the groundwater was observed to be contaminated with petroleum oil. The groundwater pumped from the excavations during the dewatering operations was treated on-site using an oil-water separator unit. The excavated soil materials, which were suspected of contamination were not re-used in backfilling the excavation. Samples taken from the contaminated soil stockpiled on-site, were tested at Columbia Analytical Service Laboratory. A copy of the analytical test report is included in Appendix H. Approximately 297 tons of contaminated soil was removed by Waste Management of New York on December 17, 1996, and was disposed at BCM Environmental's waste management facility in Woodside, Queens, New York.

Additional Work Associated With The Shadow Lane Storm Drain Repair

It was discovered during the course of off-site drainage improvement construction that a portion of storm drainage system from Shadow Lane passed underneath the final cover area and remained obstructed at some point. Inspection, using a remote camera system, indicated that the obstruction was caused by a buried catch basin filled with sediment and debris. It was decided to open up the final cover in the southern corner of the site where the suspected catch basin was believed to be located, and then to clean and repair it. The scope of work for the Shadow Lane storm drain repair work was defined in EMCON/Wehran-New York, Inc.'s October 1996 work plan submitted to the NYSDEC. A copy of the scope of work submitted to the NYSDEC, and a copy of the approval letter from NYSDEC to proceed with the work plan is included in Appendix H.

Description of Work

The Shadow Lane storm drain repair work was performed by Breco Mechanical Group between October 28, 1996, and December 30, 1996. During the repair work, the storm drain which was found to be obstructed was located within the final cover area. The storm drain was found to be blocked by wooden pieces at its end; however, no buried catch basin/structure was found at the suspected location. Upon further excavation and investigation no connecting pipe was apparent. Considering this finding, it was concluded that the storm drain extended no further across the site. Therefore, this end of the pipe was plugged with a permanent seal tightened firmly and left in place.

An excavation was advanced at the intersection of Taylor Lane and Shadow Lane to investigate a hole which had opened in the roadway. This excavation revealed a separated joint in a storm drain which ran along Shadow Lane, and a "tee" connection to a pipe extending west, back from the roadway intersection toward the Taylor's Lane site. Further dye testing revealed a hydraulic connection between the Shadow Lane storm drain and the previously excavated drain beneath the Taylor's Lane site. This testing confirmed the "tee" connection to be a lateral cross-tie between the two storm drains.

In addition, confirmatory tracing of the alignment of the pipeline along Shadow Lane was performed by National Water Main. This work verified the storm drain alignment to be completely outside of the Taylor's Lane site and in direct alignment with the pipe exposed at the intersection of Shadow Lane and Taylor Lane. The alignment of the pipes identified at the site are shown on Figure A, Shadow Lane Drain included in Appendix H of this report.

Storm Drain Improvement By Re-Routing

Having identified that no additional connections were made within the limits of the site, the lateral cross-tie was re-routed. A new catch basin was installed along the alignment of Shadow Lane at the intersection with Taylor's Lane. A new 24-inch reinforced concrete pipe (RCP) was installed between the new catch basin and the catch basin on the north side of Taylor's Lane, directly west of the intersection of Taylor's Lane and Shadow Lane.

During excavation for the new storm drain, Breco excavated behind a thrust block on a 45-degree elbow of the 12-inch water main in Taylor Lane. This disturbance to the water main resulted in temporary disruption to water service for approximately 40 residences. The service disruption was repaired by Westchester Joint Water Works, and service was restored on the same day.

Upon completion of installation of the new 24-inch RCP pipeline, the existing cross-tie was abandoned by blocking with brick and mortar, and flow through the new pipeline established. Also, the old 24-inch RCP pipeline which was found to be dead-ended was

plugged with a permanent seal at the catch basin end and blocked with brick and mortar. The roadway was backfilled and re-paved in accordance with the Technical Specifications for the project. All groundwater removed during construction was containerized and sampled for waste characterization as per EMCON/Wehran-New York, Inc.'s October 1996 Workplan. The water sample was tested at Columbia Analytical Service laboratory in Rochester, New York. A copy of the analytical test results of the water sample is included in Appendix H of this report. Approximately 630 gallons of groundwater was removed by RGM Liquid Waste Removal Corporation of New York on December 30, 1996, and was disposed at K.B.F. Pollution Management Inc.'s disposal facility in Lindenhurst, New York.

The additional work associated with Shadow Lane storm drain repair was incorporated to the Original Contract of the Closure of Taylor's Lane compost site with Change Order No. 1. A copy of Change Order No. 1 submitted to the Village of Mamaroneck is included in Appendix H to this report.

Hydraulic Capacity of Shadow Lane Storm Drain

With the rehabilitation efforts complete, the hydraulic capacity of the Shadow Lane storm drain has been improved. Through the elimination of one "tee" connection, shortening the overall flow length, and increasing the pipe diameter for a portion of the run, the hydraulic capacity of the system was increased. The hydraulic calculations included in Appendix H demonstrates that all of the rehabilitation efforts resulted in the increased capacity of the system.

Site Restoration of Storm Drain Repair Area

Upon determining that no additional connections extended beneath the Taylor's Lane site, the excavations made in the southern corner were backfilled with excavated material in accordance with the project work plan and prepared for liner repair.

Liner Repair

The Flexible Membrane Liner (FML) used for the closure of the Taylor's Lane site was 40 mil Ultraflex manufactured by GSE. Initially, upon completion of backfill, Breco supplied HDPE FML from another project to temporarily cover and seal the area until sufficient Ultraflex FML could be obtained. Textured 40 mil Ultraflex was obtained and repairs initiated the week of November 4, 1996. A portion of the repair seaming did not meet QA/QC requirements, and therefore required repair. These repairs were completed

on November 22, 1996, and were determined to meet the QA/QC requirements. Copies of the laboratory destructive test results are included in Appendix H.

Final Cover Repair

Upon completion of the liner repairs, the final cover was replaced in the disturbed areas and the area regraded and seeded. This work was performed in accordance with the Storm Drain Investigation Workplan and the Technical Specifications for the project.

FENCE

A stockade fence was installed around the perimeter of the site as per project specifications. Based on the security concerns of the local residents over the lack of visibility into the site every other vertical slat was removed from the fence along Taylor's Lane. The removed slats were provided to the Village for future fence maintenance. This modification maintains site control while allowing free visibility into the site.

OVERALL SITE RESTORATION

Upon completion of construction Breco restored the site to it original condition. This work included repairing pavement where catch basins and culverts were installed, and re-seeding grass areas damaged by construction activities along Taylor's Lane. The restoration work was observed by EMCON/Wehran-New York, Inc. A final walk-through of the site was performed on August 21, 1997. Present for the walk-through were representatives of the Village, EMCON/Wehran-New York, Inc., Breco, and the NYSDEC. Based upon the observations made during the landfill closure activities, the overall site restoration has been found to be in accordance with the plans and specifications.

CONSTRUCTION PHOTOGRAPHS

Appendix J contains photographs of typical construction activities and techniques employed during the construction of the final cover project.

CERTIFICATION STATEMENT

Based upon the observations made in the field during the course of construction and review of all applicable documents and testing reports, we hereby certify that the remedial closure of the Taylor's Lane Compost Site has been performed in accordance with the

requirements of all previously stated applicable documents with exceptions as noted herein.

Please contact us if you have any questions or comments on the enclosed material or require additional information.

Sincerely,

EMCON/WEHRAN-NEW YORK, INC.

Mark A. Swyka, P.E.
Senior Engineer

cc: Mike Blau, Village of Mamaroneck