State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

DEHNR

October 23, 1996

Mr. David Thompson
Henderson County Manager
100 North King Street
Hendersonville, NC 28739

Fac/Perm/Co ID #	Date	Doc ID#
45-01	7/19/2011	DIN 14431

Re: Full Approval of the Transition Plan for the Henderson County MSW Landfill, Permit Number 45-01

Dear Mr. Thompson:

The Division of Waste Management has completed its review of the Transition Plan for the referenced landfill submitted by the consultant, William G. Lapsley & Associates, on behalf of the owner and operator, Henderson County.

Rule .1603(a)(4)(A) of the Solid Waste Management Rules codified at 15A NCAC 13B requires the owner and operator of an existing MSWLF unit to submit a Transition Plan application for continuing operation and closure of the existing MSWLF unit by April 9, 1994. Rule .1617(d) requires that the plan contain: an Operation Plan in accordance with Rule .1625, a Closure and Post-Closure Plan in accordance with Rule .1629, a Water Quality Plan in accordance with .1623(b)(3), and a report that contains a schedule for closure of the existing MSWLF unit and, if necessary, submittal of an application for a new facility, a lateral expansion or permit renewal.

Rule .1603(d)(2) requires the Division to establish a review schedule for the Transition Plan applications which determines the adequacy of all the plans by October 9, 1996. The rule allows the Division to issue full or partial approvals and to determine the schedule for closure of the existing MSWLF unit based on its review of the complete Transition Plan application.

In accordance with Rule .1603(d)(2), the Division has completed its review of the submitted application as amended through September 24, 1996, and hereby issues full approval of the Transition Plan for the referenced landfill contingent upon receipt of an Alternative Final Cover Demonstration by this office within 180 days of the date of this letter.

The approved Transition Plan shall be effective through December 1997, or until the permitted contours are reached. Rule .1625(b)(3)(C) requires that operation drawings illustrate annual phases of development which are consistent with the minimum and maximum closure slope requirements. In accordance with this rule and Rule .1627(c)(10)(A), the existing unlined MSWLF unit shall be operated in such a manner as to cease receiving solid waste on or before

P.O. Box 27687,
Raleigh, North Carolina 27611-7687
Voice 919-733-4996

NC Reduce Reuse Recycle

FAX 919-715-3605
An Equal Opportunity Affirmative Action Employer
50% recycled/10% post-consumer paper

January 1, 1998, regardless of the approved final contours.

If there are any questions or comments, please contact Greg Eades @ (919) 733-0692, extension 344.

Sincerely,

James C. Coffey

James C. Coffey, Supervisor
Permitting Branch
Solid Waste Section

cc: Dexter Matthews, SWS
Julian Foscue, SWS
Jim Patterson, SWS
Gary Tweed, P.E., William G. Lapsley & Associates

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

DEHNR

October 11, 1996

MEMORANDUM

TO: Greg Eades, Environmental Engineer

FROM: Bobby Lutfy, Hydrogeologist BL

RE: Hydrogeologic Review Of The Revisions To The Transition Plan For The Henderson Co. MSW Landfill (Permit #45-01)

With the revisions to the Henderson County MSWLF Transition Plan submitted by William G. Lapsley & Associates, dated Nov. 6, 1995, January 10, 1996, June 3, 1996, June 12, 1996, and Sept. 24, 1996, the Local Area Study and Water Quality Monitoring Plan portions of the Transition Plan appear generally satisfactory. Therefore based upon the hydrogeologic review, the Henderson County MSW Landfill Transition Plan can be approved.

It should be noted that approval of the Transition Plan does not include approval of the sampling reports. These documents are subject to separate review by Mark Poindexter and Larry Rose of our Groundwater Compliance Unit.

cc: Mark Poindexter

P.O. Box 27687,
Raleigh, North Carolina 27611-7687
Voice 919-733-4996

N C
Reduce Reuse Recycle

FAX 919-715-3605
An Equal Opportunity Affirmative Action Employer
50% recycled/10% post-consumer paper

William G. Lapsley & Associates, P.A.
Consulting Engineers and Land Planners

1635 Asheville Highway
Post Office Box 546
Hendersonville, North Carolina 28793
704-697-7334 • FAX 704-697-7333

William G. Lapsley, P.E.
Gary Tweed, P.E.
John B. Jeter, P.E.
Philip Ward, L.S.A.

September 24, 1996

Mr. Bobby Lutfy
Hydrogeologist
Solid Waste Section
N.C. Division of Solid Waste Management
P.O. Box 27687
Raleigh, N.C. 27611-7687

Ref: Additional Hydrogeologic Review (Letter dated July 3, 1996)
Transition Plan
Henderson County Stoney Mountain Road Landfill
Permit # 45-01

Dear Mr. Lutfy:

Reference is made to your July 3, 1996 letter concerning the additional Hydrogeologic Review of the revisions to the Water Quality Monitoring Plan of the Transition Plan for the Henderson County Landfill (Permit # 45-01). Drawing No. 8 of the surface water monitoring locations have been revised to show retaining the existing upgradient location and relocation of the downgradient surface water sampling location to the main stream just prior to leaving the site. Page 9 of the text of the Water Quality Monitoring Plan (Section 4 of the Transition Plan) has also been revised to show semi-annual sampling. Two copies of each of these revisions are enclosed for insertion into your copies of the Transition Plan.

Froehling & Robertson have provided the enclosed response regarding porosity and effective porosity along with the certification of the monitoring system by a Licensed Geologist. These documents should also be incorporated into the Transition Plan at the end of Section 4.

We hope this provides the additional information you requested. Should you have any questions or need additional information, please contact our office.

Sincerely yours,

Gary T. Tweed, P.E.

cc David Nicholson

Printed of Recycled Paper

William G. Lapsley & Associates, P.A.
Consulting Engineers and Land Planners
1635 Asheville Highway
Post Office Box 546
Hendersonville, North Carolina 28793
704-697-7334 • FAX 704-697-7333

William G. Lapsley, P.E.
Gary Tweed, P.E.
John B. Jeter, P.E.
Philip Ward, L.S.A.

September 6, 1996

Mr. Greg Eades
Environmental Engineer
Solid Waste Section
N.C. Division of Solid Waste Management
P.O. Box 27687
Raleigh, N.C. 27611-7687

Ref: Technical Review (June 7, 1996)
Transition Plan
Henderson County Stoney Mountain Road Landfill
Permit # 45-01

Dear Mr. Eades:

Reference is made to your June 7, letter transmitting your technical review of the Transition Plan for the Henderson County Stoney Mountain Road Landfill. The following is in response to your review comments and questions in order of your review:

LANDFILL GAS COLLECTION SYSTEM

As you are aware the landfill gas collection system is being developed and installed by Enerdyne. This system is not being designed by our firm. Enclosed is a copy of the extraction well layout and proposed collection piping and flare station location. To date wells have been installed and Enerdyne is in process of installing collection system. We have requested Enerdyne to prepare the requested design information and provide this to your office.

Enerdyne is planning to collect the landfill gas and pipe the gas to an end user as an alternative fuel. Final agreements are now being developed for this alternative energy system. In order to pipe the gas off site it will require an easement from the N.C. Department of Correction to cross their property adjacent to the landfill. The easement has been verbally approved by the DOC and we are awaiting final easement documents being prepared by the DOC. The proposed pipeline will follow the State road system and encroachments for use of the right of way have been obtained.

As a part of the encroachment agreement with the DOC, Henderson County will be acquiring an existing sanitary sewer lift station on the DOC property which is connected to the Hendersonville wastewater collection system. It is planned to utilize this lift station for condensate disposal from the planned

Printed of Recycled Paper

landfill gas collection system. All of the aspects of the landfill gas collection system have been developing over the past couple of years. Additional information will be transmitted to your office as the landfill gas collection system program continues to develop.

LANDFILL CLOSURE

We are aware that our proposed closure plan is an alternative to the RMC. It is still our belief that the existing side slopes of the landfill have sufficient cover and due to the steep slope may be equivalent or better than the RMC. We are discussing with Camp Dresser & McKee in obtaining their services to assist in making a demonstration on an alternative cap at the Henderson County Landfill. In addition CDM will be addressing transfer station and C & D area issues. The Henderson County Board of Commissioners have recently approved a proposal from CDM to begin a scope study of these issues. It may take several months to go through the cap demonstration study and make a submittal to your office. We feel that the RMC has been developed to address caps of less than 5% slope and that steeper side slope areas have not been adequately studied.

We have met with Mr. Jim Patterson and Mr. Matthew Gantt with your Division concerning the various issues at the Henderson County Landfill. There assistance has been appreciated and we will try to keep them informed as to future developments. We hope this additional information is helpful in your continued review of the Henderson County Transition Plan. It may be helpful if a meeting is held to discuss these various issues. Should you like to meet we will be glad to arrange a meeting or if you have questions, please contact our office at 704-697-7334.

Sincerely yours,

Gary T. Tweed, P.E.

cc David Nicholson
Eldon Owen
Jim Patterson
Matthew Gantt
Bill Brinker

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

July 3, 1996

Mr. Gary Tweed
William G. Lapsley & Associates
Post Office Box 546
Hendersonville, North Carolina 28793

RE: Additional Hydrogeologic Review Of The Transition Plan For The Henderson County MSW Landfill, Permit # 45-01

Dear Mr. Tweed,

The Solid Waste Section Hydrogeologic Unit has completed a review of the November 1995 and June 1996 revisions to the Water Quality Monitoring Plan portions to the Transition Plan for the Henderson County Landfill. A few additional revisions are still needed. Please provide responses to the following comments:

WATER QUALITY MONITORING PLAN (WQMP)

I apologize that my previous review in May did not include your November revisions to the WQMP. It is my understanding that the previously existing monitoring wells (MW-1, MW-2, MW-3, & MW-4) are no longer included in the routine detection monitoring system. The current detection monitoring system for the MSWLF includes wells MW-5, MW-6, MW-7, and MW-8. Monitoring well MW-9 will be used to monitor the older inactive landfill area and is therefore not subject to the .1600 rules monitoring requirements.

Further clarification is still needed on the surface water sampling locations. Based upon the text and Sheet 8, it is my understanding that the four old surface water monitoring locations are no longer to be monitored on a routine basis. I have been unable to locate the new upstream surface water sampling location on Sheet 8. The proposed downstream monitoring location is off-site. Rather than an off-site location, a downstream location for the main creek draining the middle of the site needs to be established where it leaves the facility boundary. Re-establishing the surface water monitoring location near well MW-1 would seem appropriate. This location needs to be sampled at the same time (semi-annually) and for the same parameters as the ground-water samples.

P.O. Box 27687,
Raleigh, North Carolina 27611-7687
Voice 919-733-4996

FAX 919-715-3605
Reduce Reuse Recycle
An Equal Opportunity Affirmative Action Employer
50% recycled/10% post-consumer paper

The certification of the monitoring system by a Licensed Geologist has not been signed or sealed.

We are awaiting the revisions from Froehling & Robertson regarding porosity and effective porosity.

The June 12 revisions to the Sampling and Analysis Plan from PACE are now consistent with the rules and policies of the Solid Waste Section.

Additional review of the Sampling Reports will not be done as part of the Transition Plan review. Sampling reports are subject to the review of our Groundwater Compliance Unit.

Please provide the corrections and revisions to the Transition Plan as soon as possible, so the Solid Waste Section can complete our technical review. If you have any questions regarding this letter, please contact me at (919) 733-0692, extension 258.

Sincerely,

Bobby Lutfy

Bobby Lutfy
Hydrogeologist
Solid Waste Section

cc: Greg Eades, Solid Waste Section
David Thompson, Henderson County

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

DEHNR

June 21, 1996

Mr. David Thompson
Henderson County Manager
100 North King Street
Hendersonville, NC 28739

RE: Status of the Henderson County MSW Landfill, Permit Number 45-01

Dear Mr. Thompson:

In Section III - MSWLF Unit Capacity of the Transition Plan, Henderson County stated that they would transport their MSW to an independent waste hauler upon closure of the Henderson County Landfill. Is this still the County's intention?

Plese submit to the Solid Waste Section your County's intentions as to where your waste will be disposed of as of January 1, 1998. If you have any questions regarding this letter, please call Greg Eades at (919) 733-0692 extension 344.

Sincerely,

James C. Coffey

James C. Coffey, Supervisor
Permitting Branch
Solid Waste Section

cc: Jim Patterson, SWS

P.O. Box 27687,
Raleigh, North Carolina 27611-7687
Voice 919-733-4996

Reduce Reuse Recycle

FAX 919-715-3605
An Equal Opportunity Affirmative Action Employer
50% recycled/10% post-consumer paper

William G. Lapsley & Associates, P.A.
Consulting Engineers and Land Planners
1635 Asheville Highway
Post Office Box 546
Hendersonville, North Carolina 28793
704-697-7334 • FAX 704-697-7333

William G. Lapsley, P.E.
Gary Tweed, P.E.
John B. Jeter, P.E.
Philip Ward, L.S.A.

June 12, 1996

Mr. Bobby Lutfy
Hydrogeologist
Solid Waste Section
N.C. Division of Solid Waste Management
P.O. Box 27687
Raleigh, N.C. 27611-7687

Ref: Additional Hydrogeologic Review (Letter dated May 24, 1996)
Transition Plan
Henderson County Stoney Mountain Road Landfill
Permit # 45-01

Dear Mr. Lutfy:

Reference is made to your May 24, 1996 letter and our June 3, 1996 response concerning the additional Hydrogeologic Review of the revisions to the Local Area Study and Water Quality Monitoring Plan of the Transition Plan for the Henderson County Landfill (Permit # 45-01). Enclosed is the revised portion of the Sampling and Analysis Plan concerning Test Methodologies which has been prepared by Pace, Inc. This should be incorporated into your copy of the Sampling and Analysis Plan for the Henderson County Stoney Mountain Road Landfill Transition Plan.

Should you have any questions or need additional information, please contact our office.

Sincerely yours,

Gary T. Tweed, P.E.

cc David Nicholson

Printed of Recycled Paper

III. Test Methodologies

Pace Analytical Services, Inc. will utilize only EPA and State approved methodologies in the analysis of groundwater samples for compliance purposes for solid waste landfills. We will make every reasonable effort to obtain the lowest detection limits based on the method required and the nature of the sample matrix. Analytical problem arising from sample matrix interference's that can not be overcome will be fully documented in the analytical report.

A. Appendix I Testing

Where possible, PASI will perform all landfill monitoring for Appendix I organic constituents by method 8260 as published in the EPA manual Test Methods for Evaluating Solid Waste, SW846 third edition. When the need for increased sensitivity is required, 25 mls spargers may be employed in method 8260 or alternate approved methods providing greater sensitivity may be used.

B. Methodology & PQLs

Inorganic Constituent List:

Analyte	Test Method	Expected PQL
Antimony	SW846, 7041	.004 mg/L
Arsenic	SW846, 7060	.005 mg/L
Barium	SW846, 6010	.10 mg/L
Beryllium	SW846, 7091	.002 mg/L
Cadmium	SW846, 7131	.001 mg/L
Chromium	SW846, 7191	.005 mg/L
Cobalt	SW846, 7201	.010 mg/L
Copper	SW846, 6010	.010 mg/L
Lead	SW846, 7421	.005 mg/L
Nickel	SW846, 6010	.050 mg/L
Selenium	SW846, 7740	.005 mg/L
Silver	SW846, 7761	.001 mg/L
Thallium	SW846, 7841	.002 mg/L
Vanadium	SW846, 7911	.040 mg/L
Zinc	SW846, 6010	.010 mg/L
Mercury	SW846, 7470	.0005 mg/L

Organic Consituent List: Analyte	Test Method	Expected PQL (ug/l)
Acetone	SW846, 8260	100
Acrylonitrile	SW846, 8260	100
Benzene	SW846, 8260	5
Bromochloromethane	SW846, 8260	5
Bromodichloromethane	SW846, 8260	5
Bromoform	SW846, 8260	5
Carbon Disulfide	SW846, 8260	5
Carbon Tetrachloride	SW846, 8260	5
Chlorobenzene	SW846, 8260	5
Chloroethane	SW846, 8260	10
Chloroform	SW846, 8260	5
Chlorodibromomethane	SW846, 8260	5
DBCP	SW846, 8260	5
EDB	SW846, 8260	5
o-Dichlorobenzene	SW846, 8260	5
p-Dichlorobenzene	SW846, 8260	5
t-1,4-Dichloro-2-butene	SW846, 8260	5
1,1-Dichloroethane	SW846, 8260	5
1,2-Dichloroethane	SW846, 8260	5
1,1-Dichloroethene	SW846, 8260	5
c-1,2-Dichloroethene	SW846, 8260	5
t-1,2-Dichloroethene	SW846, 8260	5
1,2-Dichloropropane	SW846, 8260	5
c-1,3-Dichloropropene	SW846, 8260	5
t-1,3-Dichloropropene	SW846, 8260	5
Ethylbenzene	SW846, 8260	5
2-Hexanone	SW846, 8260	5
Bromomethane	SW846, 8260	10
Chloromethane	SW846, 8260	10
Dibromomethane	SW846, 8260	5
Methylene Chloride	SW846, 8260	10
MEK	SW846, 8260	100
Iodomethane	SW846, 8260	10
MIBK	SW846, 8260	50
Styrene	SW846, 8260	5
1,1,1,2-Tetrachloroethane	SW846, 8260	5
1,1,2,2-Tetrachloroethane	SW846, 8260	5
Tetrachloroethene	SW846, 8260	5
Toluene	SW846, 8260	5
1,1,1-Trichloroethane	SW846, 8260	5
1,1,2-Trichloroethane	SW846, 8260	5
Trichloroethene	SW846, 8260	5
CFC-11	SW846, 8260	5
1,2,3-Trichloropropane	SW846, 8260	5
Vinyl Acetate	SW846, 8260	50
Vinyl Chloride	SW846, 8260	10
Xylene (Total)	SW846, 8260	5

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

June 7, 1996

Mr. Gary Tweed, P.E.
William G. Lapsley & Associates, P.A.
1635 Asheville Highway, P.O. Box 546
Hendersonville, NC 28793

Re: Additional Review Comments, Henderson County Transition Plan, Permit Number 45-01

Dear Mr. Tweed:

The NC Division of Solid Waste Management, Solid Waste Section (Section) has completed its review of the revisions to the above referenced Transition Plan application. At this time, all requirements of the engineering portion of the transition plan have been satisfied with the exception of the following two issues.

Landfill Gas Collection System

The Section requests that additional information with respect to the gas collection system installed by Enerdyne be submitted including such details as exact locations of extraction wells and piping, well construction details, locations of the supporting infastructure and the procedure for removal and disposal of the gas condensate.

Landfill Closure

The closure cap system as specified does not meet the requirements for the minimum regulatory cap (RMC) specified by rule .1627(c)(1)(A). Alternatives to the RMC are possible under rule .1627(c)(2). In order to close with an alternative, the owner must demonstrate that the proposed cap system will achieve an equal or greater reduction in inflitration as opposed to the RMC. Therefore, a technical demonstration is required prior to the Section being able to make a determination on the proposed closure plan. The demonstration must include site specific inputs such as soil characteristics, types, depths and permeability. Section technical staff are available to provide guidance on making such a demonstration.

With respect to the proposed RMC on the crest of the landfill. Is six inches of topsoil/protective cover sufficient to protect the compacted clay barrier layer from frost, dessication, freeze/thaw, and to a provide sufficient root zone to maintain a healthy stand of vegetation? Please adjust accordingly.

If you have any questions or require further assistance, please feel free to call me at (919) 733-0692 Extension 344.

William G. Lapsley & Associates, P.A.
Consulting Engineers and Land Planners
1635 Asheville Highway
Post Office Box 546
Hendersonville, North Carolina 28793
704-697-7334 • FAX 704-697-7333

William G. Lapsley, P.E.
Gary Tweed, P.E.
John B. Jeter, P.E.
Philip Ward, L.S.A.

June 3, 1996

Mr. Bobby Lutfy
Hydrogeologist
Solid Waste Section
N.C. Division of Solid Waste Management
P.O. Box 27687
Raleigh, N.C. 27611-7687

Ref: Additional Hydrogeologic Review (Letter dated May 24, 1996)
Transition Plan
Henderson County Stoney Mountain Road Landfill
Permit # 45-01

Dear Mr. Lutfy:

Reference is made to your May 24, 1996 letter of the additional Hydrogeologic Review of the revisions to the Local Area Study and Water Quality Monitoring Plan of the Transition Plan for the Henderson County Landfill (Permit # 45-01). The following response is offered in the order of your review comments:

WATER QUALITY MONITORING PLAN (WQMP)

You stated that you had not received any revised test of the WQMP addressing you letter os September 26, 1995. The entire Transition Plan including the WQMP was revised and resubmitted to Mr. Greg Eades on November 30, 1995. Reference is also made to our responses to you dated November 6, 1995 and January 10, 1996. (copies enclosed). It is apparent that you were not given a copy of the revised Transition Plan; therefore, enclosed is a copy of the revised Section 4 Water Quality Monitoring Plan.

FROEHLING & ROBERTSON REPORT OF OCTOBER 25, 1995

We are forwarding a copy of your review comments to F & R concerning porosity requesting that they make the appropriate revisions to their October 25, 1996 report. Revisions will be forwarded to your office upon receipt.

SAMPLING & ANALYSIS PLAN BY PACE LABS

We are forwarding a copy of your review comments to Pace Labs concerning test methods for the inorganic constituent list. Revisions will be forwarded to your office upon receipt.

Printed of Recycled Paper

Should you have any questions or need additional information, please contact our office.

Sincerely yours,

Gary T. Tweed, P.E.

cc David Nicholson

SECTION 4 WATER QUALITY MONITORING PLAN

Section 4.1 Ground Water Monitoring System

The Henderson County Stoney Mountain Road Landfill has an existing water quality monitoring program (presently under contract to Pace Labs, Inc.) consisting of four ground water monitoring wells (one upgradient well and three down gradient wells) and three surface water monitoring locations. A copy of the Pace Labs, Inc. water quality monitoring program is included in the appendix to this report. The existing ground water monitoring wells are located on drawing No. 1 and 8 of the enclosed drawings. There are three old existing wells that are deep approximately 70 feet. A review of the existing ground water monitoring program by Mr. Bobby Lutfey with the Division of Solid Waste recommended that additional ground water monitoring wells be located closer to the waste boundary and at a shallower depth such that sampling of the upper most aquifer be achieved. It was proposed to install three downgradient ground water monitoring wells in the order of 20 to 30 feet deep into the upper most aquifer. These well have been installed and the location of the new ground water monitoring wells are shown on drawing No. 8. The County is now conducting the semi-annual monitoring on these new ground water monitoring wells. The existing wells will be kept but not routinely monitored. In the event that contamination is detected in the new wells, then the existing wells could be reactivated in the sampling program. There are also three

surface water quality monitoring locations near the existing ground water monitoring wells. These are shown on drawings No. 1 and No. 8 and will be discussed further below.

Existing water quality sampling results of the deep ground water monitoring wells and surface water quality stations (see the appendix for past five years sampling data) have shown no significant contamination. Sampling results for the past five years are shown in the appendix of this report. Only iron and manganese concentrations appear to be elevated and are present in old upgradient ground water monitoring well sampling results. Review of the data indicates that the elevated iron and manganese levels are due to natural soil conditions in the area and not as a result of solid waste.

The new ground water monitoring wells have been constructed in accordance with N.C. Well Construction Standards (15A NCAC 2C). The ground water monitoring wells are to be sampled semi-annually in accordance with T15A:13b.1632. Sampling collection, preservation and shipment, chain of custody control, quality assurance, and quality control procedures are to be followed. Ground water elevations are to be measured in each well at each sampling event prior to purging the well. Each well has been located by a N.C. Registered Land Surveyor. The existing wells on drawings No. 1 and 8 have been located by registered surveyors. The initial base line sampling of the new wells has detected some contamination, and the County has been

directed to begin Appendix II monitoring.

DETECTION MONITORING PROGRAM

At a minimum the ground water monitoring wells will be sampled for the constituents listed in Appendix I of 40 CFR Part 258 "Appendix I Constituents for Detection Monitoring." A copy of the Appendix I is included in the appendix to this report. The sampling frequency for the ground water monitoring wells shall be semi-annually. During the first semi-annually sampling event a minimum of four independent samples from each well (background and downgradient) will be collected and analyzed for the Appendix I constituents. At least one sample from each well (background and downgradient) will be collected and analyzed during subsequent sampling events. Upon determination that there is a statistically significant increase over background for one or more of the constituents listed in Appendix I at any monitoring well, the County will file a report to the Division within 14 days and place a notice in the operations record indicating which constituents have shown statistically significant changes from background conditions. The County will establish an assessment monitoring program as outlined below within 90 days unless the County can demonstrate that a source other than the MSWLF unit caused the contamination or that an error was made in sampling, analysis, statistical evaluation, or natural variation in ground-water quality.

ASSESSMENT MONITORING PROGRAM

Where a statistically significant increase over background has been detected for one or more of the Appendix I constituents or whenever a violation of the N.C. Ground Water Quality Standards (15A NCAC 2L, .0202) has occurred, the County will initiate assessment monitoring. The County will sample all ground water monitoring wells within 90 days of initiation of assessment monitoring and annually thereafter for all constituents identified in Appendix II of 40 CFR Part 258 "Appendix II List of Hazardous Inorganic and Organic Constituents." A minimum of one sample from each downgradient well will be collected and analyzed during each sampling event. For any Appendix II constituents detected a minimum of four independent samples from each well (background and downgradient) will be collected and analyzed to establish background for the new constituents. Within 14 days after obtaining results of the sampling, the County will submit a report to the Division and place a notice in the operating record identifying the Appendix II constituents that have been detected. Within 90 days and semiannually thereafter, the County will sample all ground water monitoring wells for all Appendix I constituents and those Appendix II constituents that have been detected. A report of each sampling will be submitted to the Division and placed in the operating record. At least one sample from each well (background and downgradient) shall be collected and analyzed during each of

the sampling events. The County will report to the Division background concentrations for any constituents detected and obtain from the Division a determination of ground water protection standards, for all constituents detected. Where the concentrations of Appendix II constituents are below background values for two consecutive sampling events, the County will report this information to the Division and request to return to detection monitoring. Where the concentrations of Appendix II constituents are above background values but below the approved ground-water protection standards, the County will continue assessment monitoring. Where the concentration of Appendix II constituents are above the approved ground-water protection standards, the County will within 14 days of the finding submit a report to the Division, place a notice in the operation record, and notify all appropriate local government officials. In addition the County will characterize the nature and extent of the release by installing additional monitoring wells, as necessary and install at least one additional monitoring well at the facility boundary in the direction of contamination migration and sample the well for Appendix I constituents and the detected constituents of Appendix II. If contaminates have migrated off-site, the County will notify all persons who own land or reside on land that directly overlies any part of the plume of contamination. The County will within 90 days initiate an assessment of

corrective measures as outlined below (See Assessment of Corrective Measures). Should the County be able to demonstrate that contamination was caused by a source other than the MSWLF, then they will return to detection monitoring as appropriate.

ASSESSMENT OF CORRECTIVE MEASURES

The County shall initiate assessment of corrective action measures within 90 days of finding that any of the constituents listed in Appendix II have been detected at a statistically significant level exceeding the ground water protection standard. Assessment monitoring of the ground water monitoring wells will continue. The assessment of corrective measures will include an analysis of effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy addressing a least the following:

The performance, reliability, ease of implementation, and potential impacts of remedies.

The time required to begin and complete the remedy.

The costs of remedy implementation.

Permitting requirements of the remedy.

The County will discuss the results of the corrective measures assessment prior to the selection of the remedy in a public meeting with interested and affected parties. The County will provide a public notice at least 30 days prior to the meeting.

SELECTION OF REMEDY

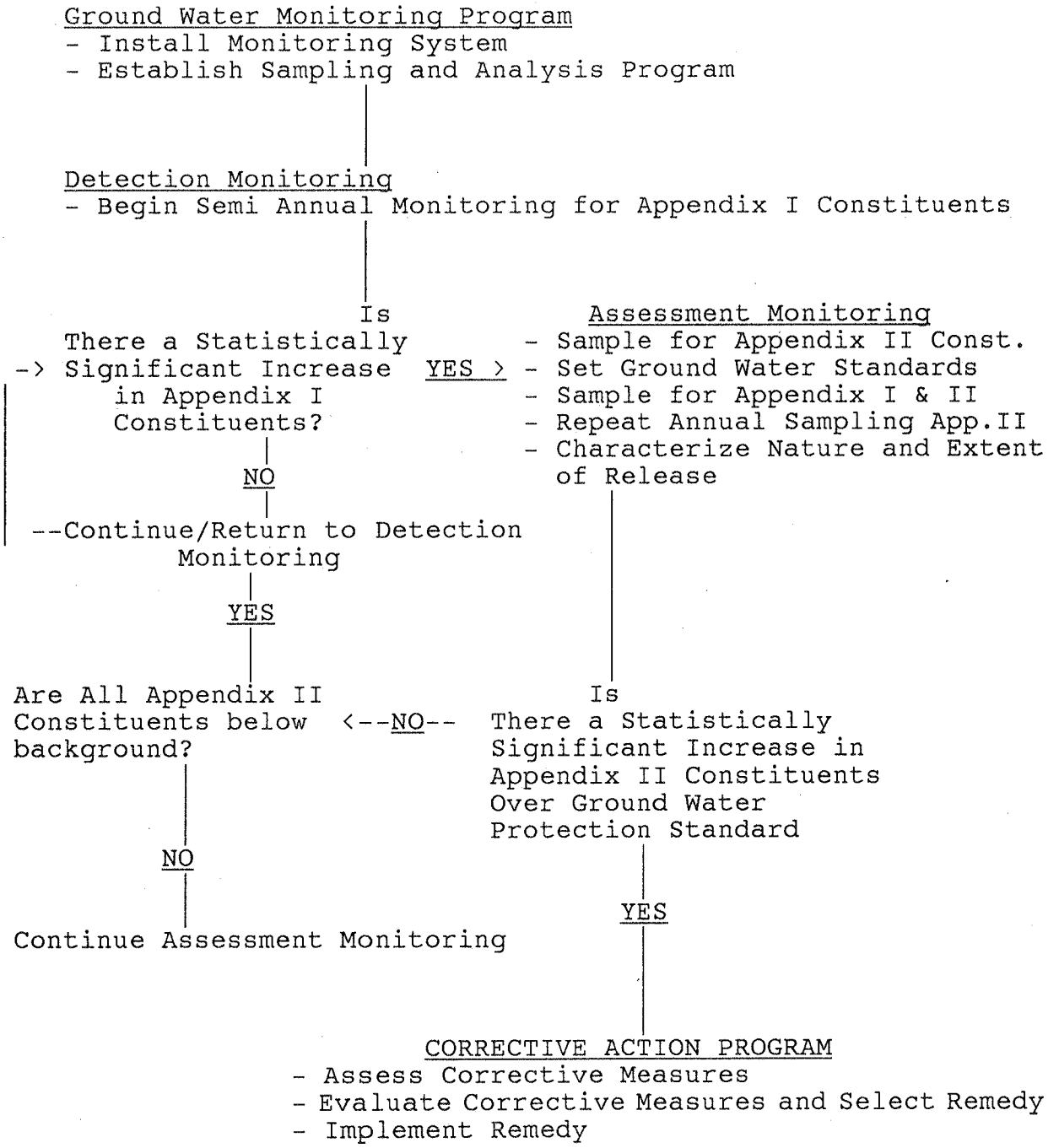
Based on the results of the corrective measures assessment, the County will select a remedy and within 14 days submit an application to modify the permit describing the selected remedy to the Division.

IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

Upon approval of the selected remedy, the County will implement the remedy in accordance with the approved implementation schedule and submit a report documenting the completion of the remedial action. Upon approval, the County will place the approved report in the operating record. The County will request release from the requirements for financial assurance for the corrective action when the Division determines that the corrective action remedy has been completed.

The following flow chart depicts the ground water monitoring and corrective action program:

GROUND WATER MONITORING AND CORRECTIVE ACTION PROGRAM



Section 4.2 Surface Water Monitoring System

The County has in place monitoring of surface waters on the landfill property at four locations near the four existing ground water monitoring wells. Sampling results have not indicated any significant levels of contamination. Iron and manganese have been detected at all locations and, as with ground water monitoring results, have been attributed to natural background conditions. With the degree of sampling required for the ground water monitoring program, it is not planned to sample the surface water streams at the same semi-annual frequency as the ground water wells. It is planned to take annual samples from the stream next to the upgradient well and the stream leaving the site for the constituents in Appendix I. Upon detection of any significant levels of contamination in the ground water wells that requires assessment monitoring of Appendix II constituents, then it is planned to sample the two surface water streams as well. Should there be no contamination detected, then the surface water streams will return to annual detection monitoring. The two planned surface water stream sampling locations are shown on drawing No. 8.

Section 4.3 Water Quality Monitoring Plan Certification

GEOLOGIST'S CERTIFICATION

I, _____, as duly registered Professional Geologist in the State of North Carolina, having been authorized to prepare the Water Quality Monitoring Plan for the **Henderson County Stoney Mountain Road Sanitary Landfill,** hereby state that, to the best of my abilities, certify that the Water Quality Monitoring Plan if implemented by Henderson County should be effective in providing early detection of any release of hazardous constituents to the uppermost aquifer.

Signature_____Registration No._____

Date_____

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

May 24, 1996

Mr. Gary Tweed
William Lapsley & Associates
1635 Asheville Highway
Hendersonville, N.C. 28739

RE: Additional Hydrogeologic Review Of The Transition Plan For The Henderson County MSW Landfill, Permit # 45-01

Dear Mr. Tweed,

The Solid Waste Section Hydrogeologic Unit has completed a review of the revisions to the Local Area Study and Water Quality Monitoring Plan portions to the Transition Plan for the Henderson County Landfill. Further revisions are still needed for the Water Quality Monitoring Plan. Please provide responses to the following comments:

WATER QUALITY MONITORING PLAN (WQMP)

As of this date the Solid Waste Section has still not received any revised text for the WQMP. The items raised in my initial review letter of September 26, 1995 still need to be addressed.

There are a couple of corrections needed to the Froehling & Robertson Report of October 25, 1995:

- The F&R Report apparently estimated effective porosity based upon the proportion of the volume of voids occupied by water. For the purposes of hydrogeologic study effective porosity is the water that is not bound to the soil particles but is free to move through the soil media. Typically this is measured by the water that will drain by gravity from a soil sample. Because of the long time periods required to make actual laboratory measurements, effective porosity values are generally estimated based on soil analyses. Generally effective porosity is significantly less than total porosity. The effective porosity values in the report need to be revised consistent with this understanding of effective porosity.

- Because effective porosity more accurately represents the water available for movement through the soil media, effective porosity (rather than total porosity) should be used to calculate ground-water seepage velocity.

- Due to the factors outlined in the previous two points, the seepage velocities need to be recalculated based upon revised effective porosity values.

The revised Sampling and Analysis Plan submitted January 10, 1996 with the (12/95 revised) test methodologies prepared by PACE has several errors in the test methods for the inorganic constituent list: Antimony, Chromium, Cobalt, Lead, Nickel, Selenium, and Silver.

Please provide the corrections and revisions to the Transition Plan as soon as possible, so the Solid Waste Section can complete our technical review. If you have any questions regarding this letter, pleas contact me at (919) 733-0692, extension 258.

Sincerely,

Bobby Lutfy

Bobby Lutfy
Hydrogeologist
Solid Waste Section

cc: Greg Eades, Solid Waste Section
David Thompson, Henderson County

William G. Lapsley & Associates, P.A.
Consulting Engineers and Land Planners
1635 Asheville Highway
Post Office Box 546
Hendersonville, North Carolina 28793
704-697-7334 • FAX 704-697-7333

William G. Lapsley, P.E.
Gary Tweed, P.E.
John B. Jeter, P.E.
Philip Ward, L.S.A.

January 10, 1996

Mr. Bobby Lutfy
Hydrogeologist
Solid Waste Section
N.C. Division of Solid Waste Management
P.O. Box 27687
Raleigh, N.C. 27611-7687

Ref: Sampling and Analysis Plan
Hydrogeologic Review
Transition Plan
Henderson County Stoney Mountain Road Landfill
Permit # 45-01

Dear Mr. Lutfy:

In follow up to our earlier response date November 6, 1995 to your September 26, 1995 letter of the Hydrogeologic Review of the Local Area Study and Water Quality Monitoring Plan of the Transition Plan for the Henderson County Landfill (Permit # 45-01), enclosed is a revised Sampling and Analysis Plan prepared by Pace Labs. This information is being submitted as requested in your September 26, 1995 review.

Should you have any questions or need additional information, please contact our office.

Sincerely yours,

Gary T. Tweed, P.E.

Printed of Recycled Paper