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Johnston Co.

51022001



Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Interim Director

October 30, 2001

Mrs. Joan Smyth, P.G.
G.N. Richardson & Associates
425 N. Boylan Avenue
Raleigh, N.C. 27603

RE: Hydrogeologic Review Of The Revised Design Hydrogeologic
Report, Johnston Co. MSWLF Phase 4A, Permit No. 51-02

Dear Mrs. Smyth,

This letter provides comments from the hydrogeologic review of the above referenced document. There are a still some items that need additional clarification and/or revisions. Please respond to the following questions and comments:

Page 1 On the first line of page 1, the "piggy-back" expansion phase is between unlined MSWLF units, not "lined".

Page 1 The last line of page 1 should be deleted. Because I am not familiar with the details of the water quality assessment, and because of the dynamic nature of doing an assessment, I am not comfortable with stating that the Water Quality Monitoring Plan for this project supersedes previous plans.

Page 3 Inert debris is defined differently from Construction and Demolition debris. Therefore the word "Inert" should be deleted from the last sentence of the first paragraph of section 2.4.

Page 4 There is an erroneous statement that "a Water Quality Monitoring Plan is not included in this document".

Page 4 The statement is made that "this phase (Phase 4A) will be constructed as a double-lined landfill for portions of the landfill..." If it is not possible for Phase 4A to be monitored separately from Phases 3 and 4, then the entire Phase 4A will need to be double-lined in order to effectively monitor this Phase distinctly.

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Mrs. Joan Smyth
Johnston County MSWLF
Design Study - Phase 4A
Page 2

Page 5 Section 3.4 should read: There are no Holocene age fault zones...

Pages 9 and 10 Section 4.3.3 should reference the proposed spray irrigation plan for the landfill site and how this could influence ground-water levels.

Page 10 Section 4.3.4 references the "Geophex Report is provided in Appendix G", however the Table of Contents references Appendix I.

Page 11 For Section 4.4.1, refer to previous comment above regarding the second comment for Page 4.

Page 11 Section 4.4.2 is somewhat confusing in the usage of the terms "units" and "aquifers". It should be made clear that there is only one aquifer system which includes the unconsolidated soils and the fractured bedrock. Reference to a "second aquifer" should be deleted.

Page 12 The last paragraph of Section 4.4.2 is also confusing. While the fracture flow is different for the porous flow, it is my understanding that there is one interconnected aquifer system. Comments of the "aquifer thickness" need to be clarified and revised.

Page 12 Section 4.4.3 discusses ground-water recharge and discharge conditions. The report seems to accurately conclude that there is ground-water discharge to the lower portion of the unnamed tributary that drains the Phase 4A area. If this is the case, I again raise the question of the need for a french drain system for the lower portion of this drainage. (The need for this would be augmented by the proposed spray irrigation program at the landfill site.)

Page 14 There is still some confusion on how effective porosity values were determined. There are some references to empirical values from Groundwater and Wells and other references to values based on soil analyses and the use of the Textual Classification Triangle. The effective porosity values that appear in Tables 5 and 6 do not appear consistent with soils data plotted on the Textual Classification Triangle.

Page 14 As previously referenced, if the Phase 4A area can not be monitored separately from the unlined landfill units, then the entire Phase 4A unit needs to have a leak detection system using the double-liner system. What is the basis for establishing an Action Leakage Rate of 3,000 gallons per day? The water quality of the Leakage should be monitored at least semi-annually, at the time of water quality monitoring. The mouth of the drainage feature for Phase 4A is a critical ground-water monitoring location. Ground-water monitoring needs to be included for this area.

Figure 4 The Aerial Photograph is not legible.

Figures 15 and 16 The ground-water contours in the vicinity of well CDLMW-5 are still inconsistent with the data on both figures. The ground-water contours are still somewhat questionable in the vicinity of the MW-9 well cluster. While the contours are consistent with the wells, they cross over topographic contours indicating above ground flow. (Some of the problem may result from the plotting of the well locations. For example MW-10 is plotted on the figures at a ground surface elevation of about 168, while Table 1 indicates an elevation of over 173.) Comparing the ground-water contours with the topographic contours, both figures indicate surface water flow fairly far up all three drainage features. This may need to be re-evaluated.

Table 2 The Top of Casing Elevation (and ground surface elevation) on the revised Borehole Log for MW-8D is still inconsistent with the data on Table 2.

Table 5 and Table 6 It is still not clear how the Effective Porosity Values were determined. It appears that some are still based upon empirical book values and others are stated to be based upon soil analyses and use of the Textual Classification Triangle. It is not clear which values were arrived at by which method. I was not able to match any data I plotted on Textual Classification Triangles with data reported in the Tables. Site specific samples are preferred, however the samples should be representative of the saturated portion of the formation being referenced. The Table of Contents should reference Table 5A.

Apx. F Refer to previous comments regarding well MW-8D.

Apx. G In the Table at the beginning of Appendix G, the value for the % Passing # 200 for the first PZ-5S sample should be 25.9.

Mrs. Joan Smyth
Johnston County MSWLF
Design Study - Phase 4A
Page 4

Water Quality Monitoring Plan:

Pg. 2 An additional monitoring well is needed at the mouth of the drainage feature downgradient of Phase 4A. The well should be located below the sump for Phase 4A, but above the sedimentation basin.

Pg. 5 The well identification should be the first item listed in the field log, as discussed on the top of Page 5.

Page 6 If MicroPurge is to be used additional details are needed on the sampling equipment, pump locations, pumping rates, sampling techniques, etc.

Page 6 More detail is needed in the discussion of stabilized field parameters including number of consecutive samples taken and time separating samples, etc.

Page 6 If disposable Teflon bailers are to be used they must be certified to have been cleaned according to the approved EPA protocol.

Page 7 In the second paragraph on Page 7, wells slow to recharge should still be sampled. Field logs should note slow recharge conditions and difficulty sampling and propose a remedy for the problem.

Page 7 All monitoring wells in the approved monitoring system need to be sampled in as short a time period as possible, generally within a period of 24 to 48 hours.

Page 8 EPA requires all RCRA metals samples to be unfiltered for total metals analyses. Filtered samples for dissolved metals analyses would be supplemental to those normally required by the Solid Waste Section. Therefore, references to filtering should be deleted. (Also delete references on Pages 11 and 12.)

Page 9 By "Metal containers", I assume it is meant containers for metals analyses samples.

Page 9 The "Equipment Decontamination" procedure outlined in Section 2.6 is not consistent with either the protocol for decontaminating Teflon or Stainless Steel sampling equipment, as found in the North Carolina Water Quality Monitoring Guidance Document For Solid Waste Facilities.

Mrs. Joan Smyth
Johnston County MSWLF
Design Study - Phase 4A
Page 5

Page 10 The surface water sampling location identification should be the first item recorded in the field book.

Page 14 "Chemical cold packs" are not recommended for cooling water samples.

Page 17 The last paragraph on Page 17 should be deleted.

Page 21 It is my understanding that three additional wells have been approved by the Solid Waste Section (wells MW-14D, MW-15D, and MW-16D.) If the Monitoring Plan is to continue referencing monitoring for all the unlined landfill phases, rather than just monitoring for Phase 4A, then these additional wells need to be referenced. As previously discussed, at least one additional well is needed at the mouth of the drainage for Phase 4A.

Table 2 An additional surface water monitoring location is needed at the mouth of the tributary draining the central part of the landfill site, immediately before the tributary drains into Middle Creek.

Please provide the information and revisions as referenced above. If you, other representatives of G. N. Richardson, or Johnston County have any questions regarding this letter, or you would like to arrange a meeting to discuss this letter, you may contact me at (919) 733-0692 extension 258.

Sincerely,

Bobby Lutfy

Bobby Lutfy
Hydrogeologist
Solid Waste Section

cc: Jim Coffey, Solid Waste Section
Ed Mussler, Solid Waste Section
Robert Hearn, Solid Waste Section
Mark Poindexter, Solid Waste Section

North Carolina
Department of Environment and Natural Resources

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Interim Director



October 30, 2001

Mr. Haywood Phthisic
Director of Public Utilities
Johnston County
P.O. Box 2263
Smithfield, NC 27577

Re: Irrigation of Reclaimed Wastewater at the Johnston County Municipal Solid Waste Landfills, Modification to Permits 51-01 and 51-02

Dear Mr. Phthisic:

The Solid Waste Section (Section) has completed its review of the proposed modification to the permits for the referenced facilities. In accordance with the Solid Waste Management Rules and Condition 9, Appendix 4, Permit to Operate Number 51-02, the Section hereby approves the modification which allows the irrigation of reclaimed wastewater consistent with the Operations Manual dated October 2001, submitted on behalf of Johnston County by G. N. Richardson & Associates. The modification will be incorporated into the permit for the new MSWLF facility, which combines both existing landfills into one permitted facility.

The following document will be included, by reference, in the list of approved documents for Permits 51-02 and 51-01, and any new permit prepared by the Section. The document is referenced as:

Operations Manual- Addendum. (Irrigation of Reclaimed Wastewater). Johnston County MSW Landfill. Johnston County, North Carolina. Prepared for: Johnston County Department of Public Utilities. Prepared by: G. N. Richardson & Associates, Inc. Raleigh, NC. August 2001. Revised October 2001.

The county has prepared, and submitted to the Division of Water Quality, drawings and details of elements of the irrigation system that will be installed at the two landfill facilities, i.e. pump stations and force mains. The proposed location and construction details of permanent systems must be included with the facility drawings that are being prepared for the permitting process currently under review by the Section. In addition, any construction activities that are completed before issuance of a permit to construct by the Section for Phase 4A, must be documented with as-built drawings, submitted to the Section. This will be a requirement of any Solid Waste permit issued by the Division of Waste Management.

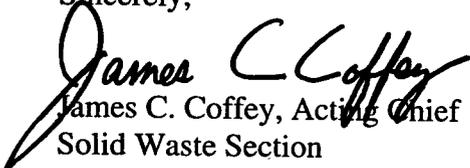
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It should be understood by the County that the irrigation activities proposed in the modification could affect the development of future municipal solid waste landfill units within the facility and could result in a reduction in total landfill disposal capacity.

If you have any further questions, please do not hesitate to contact me at (919) 733-0692, extension 256. Specific questions about permitting and the current status of the permit application can be directed to Ed Mussler, the permitting engineer.

Sincerely,


James C. Coffey, Acting Chief
Solid Waste Section

cc: Ed Mussler, DWM
Mark Fry, DWM
Robert Hearn, DWM
Jim Barber, DWM
Kenneth Pohlig, DWQ
Greg Richardson, GNRA

North Carolina
Department of Environment and Natural Resources

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Interim Director
October 2, 2001



Mr. Haywood Phthisic
Public Utilities Director
Johnston County Department of Public Utilities
P.O. Box 2263
Smithfield, NC 27577

Re: Johnston County Landfill, Cell 4A, Site Study Process, New Facility Designation,
Permits 5101 and 5102

Dear Mr. Phthisic,

The Solid Waste Section (Section) of the Division of Waste Management is conducting a permit review of the Cell 4A proposal at the Johnston County Landfill. As was previously stated in a letter to the county manager, dated June 15, 2001, the proposed development of Cell 4A qualifies the existing facilities (5101 and 5102) as a new facility. Rule .1603(a)(1)(E) defines a new facility as one that has a substantial change to the waste stream defined in the effective permit.

Your consultant, G.N. Richardson and Associates, Inc., of Raleigh, NC, has filed a permit to construct application for Cell 4A with the Section. Included in this permit application are demonstrations to update the existing site study of the landfill locale. A detailed site study was performed in 1995 for facility 5102 which is adjacent to the original landfill, 5101. Documentation presented by your consultant indicates that there have not been significant changes in the study area.

The Section is performing a technical review on the permit application that has been submitted. The following items need to be addressed to complete the site study portion of the application.

1. Vol. 2- Section 3.1-Airport Safety- The airports, State and Federal FAA need to be notified in accordance with Rule .1622 (1)(b). Please verify that the smaller airport does not meet the definition as supplied in .1622 (1)(d)(i). The airports are within the six mile limit of the new FAA regulations. Please discuss.
2. Vol. 2- Section 3.3- Wetlands- The wetlands need to be addressed in accordance with Rule .1622 (3)(a)(i)-(v). Some of this information may have been submitted to the Division of Water Quality or the Army Corps of Engineers, but should be summarized in the solid waste permit.
3. A facility plan revision needs to be supplied. This plan should include the capacity of the

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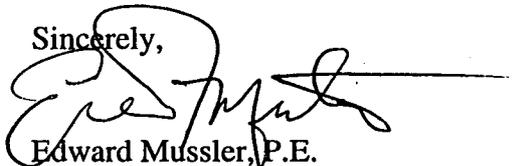
entire proposed facility (i.e, Cells 4A, 5-8), the phase capacity and remaining capacity. An expression of the monthly disposal rate is needed. Johnston County has substantial growth projections. A rate expression, for permitting purposes, is needed. A growth factor or standard deviation could be employed.

4. The decision to locate a solid waste management facility is the responsibility of the unit of local government having jurisdiction over the proposed site. Johnston County needs to provide a resolution/vote on motion, of the county commissioners, in accordance with Rule .1618(c)(5)(A). The Section advises that the resolution/motion be clear as to its intent. The proposed facility plan's requirements are specified in Rule .1618(c)(6), and specifically the requirements of Rule .1619(e)(1) and (2) provide guidance for the elements that the commissioners need to be cognizant of.
5. The Section Hydrogeologist has made previous comments on the site study documentation that has been submitted. The Section has been supplied a response which is under review. Johnston County will be supplied additional comments, if necessary, under separate cover from the Section Hydrogeologist.

The above comments are intended to expedite the Section's review of the submitted application. They in no way limit the Section from requesting additional information, should it be deemed necessary. Please include a header or footer showing the revision and date of revision for any pages of the application that are amended.

If there are any questions, please do not hesitate to contact the Section. Our phone number is 919.733.0692. My extension is 343.

Sincerely,



Edward Mussler, P.E.
Environmental Engineer
Solid Waste Section.

cc: Pieter Scheer, P.E., GNRA
Mark Fry, DWM
Jim Barber, DWM
Robert Hearn DWM

North Carolina
Department of Environment and Natural Resources



Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Interim Director

July 26, 2001

MEMORANDUM

To: Ed Mussler
From: Bobby Lutfy *BL*
RE: Johnston County MSW Landfill Expansion
Piezometer Abandonment

I have reviewed the Grading Plan for the Johnston County Landfill Phase 4A expansion. It appears that the four foot separation requirement is satisfied with this design. Therefore, Piezometers PZ-5, 5D, 6, 7, 8, 9, and 9D may be abandoned if necessary. The piezometers must be properly abandoned according to the Rules for permanent well abandonment, 15A NCAC 2C .0113(a)(2).

I am still reviewing the Design Hydrogeologic Report and hope to complete my review within the next couple of weeks. A meeting has been scheduled for next Monday with Ken Pohlig of the Division of Water Quality to discuss the proposed Reuse Irrigation System at the site.

CC: Jim Coffey

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North Carolina
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Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
William L. Meyer, Director



June 15, 2001

Mrs. Joan Smyth, P.G.
G.N. Richardson & Associates
425 N. Boylan Avenue
Raleigh, N.C. 27603

RE: Hydrogeologic Review Of The Design Hydrogeologic Report,
Johnston County MSWLF Phase 4A Expansion, Permit No. 51-02

Dear Mrs. Smyth,

This letter provides comments from the hydrogeologic review of the above referenced document. There are a few items that need additional clarification. Please respond to the following questions and comments:

Pg 2 It is not clear in the Regional Characterization Study if there are any "surface water intakes" in the study area, or if the public water supply "service area" includes the entire study area. Rule .1618(c)(1)(C).

Pg 2 It is not clear in the Local Characterization Study: (A) if there are any on-site easements, (B) what the zoning classifications are, (C) the location of private residences and schools, (D) the location of commercial and industrial buildings, and (F) the location of historic sites. Rule .1618(c)(2).

Pg 4 A Water Quality Monitoring Plan needs to be provided that provides discussion about the adequacy of the existing monitoring system to provide effective monitoring for this area, including Phases 3, 4, and especially 4A. Are additional ground-water or surface water monitoring locations needed? Will it be necessary to alter or relocate any of the existing monitoring wells to construct and effectively monitor Phase 4A?

Pg 4 Has the approval from the Army Corps. Of Engineers been obtained for the wetlands between Phases 3 and 4?

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Mrs. Joan Smyth
Johnston County MSWLF
Design Study - Phase 4A
Page 2

Pg 7 Please explain and clarify the statement made at the bottom of page 7 that: "The contact between the Middendorf Formation and metamorphic rocks of the Carolina Slate Belt is generally found in boreholes and outcrops at elevations of 165 - 175 feet".

Pg 8 It is my understanding that additional geophysical mapping of dikes was to be done. What are the results of this study?

Fig 7 One of the figures needs to show the location of the monitoring wells for the Phase 5 area and the leachate pond.

Fig 8 Much of the data used to generate the Bedrock Contour Map is inconsistent with the boring logs. Data for borings MW-6, MW-7, PZ-1, T-5, T-6, and T-7 appears to be in error. Is there any data from the Phase 5 area that could supplement the limited data presented?

Figs 10, 11, 12 If the Bedrock data is that used for Fig 8, then some of the data is in error. It appears that the well stick-up is plotted for some wells but not others. Some of the well data seems to be plotted up to two or three feet off, based on the boring logs. This makes it difficult to interpret the elevations for PWR, rock, water, etc.

Fig 15 The Water Table Elevation Data from Table 2 differs slightly from that on Figure 15 for MW-7 and differs significantly for MW-12b. The water table contours could be adjusted slightly in several locations to better reflect the data. (Especially note the vicinity of MW-8.)

Fig 16 There appear to be a number of discrepancies between the data in Table 2 and the data plotted for Figure 16. The data and contouring in the vicinity of PZ-10 is of special concern.

Table 1 The TOC Elevation for MW-5 is inconsistent with the Table in Appendix E. For several of the wells with the MW designation, the Ground Elevation, Top Of Screen Elevation, and Bottom Elevation values seem inconsistent with the Boring Logs.

Mrs. Joan Smyth
Johnston County MSWLF
Design Study - Phase 4A
Page 3

Table 3 Some of the data in Table 3 is inconsistent with the data in Appendix G. (Note the LL and PI values for PZ-5s and PZ-7.) Some of the sieve data is also difficult to match. For some piezometers there appears to be more than one set of data and some of the values differ.

Table 5 It is not stated what the units are for the K values. I assume they are ft/day since this is used for Velocity. However I can not correlate the data in Table 5 with the data in Appendix H. What is the source of the I and n values?

Table 5 For vertical gradients, typically the value is calculated by dividing the difference in the water table elevations for the two wells by the difference in the mid-points of the screen intervals. (For the shallow well the mid-point of only the saturated portion of the screen interval is used.) Also comparisons need to be made over time to determine if there are seasonal variations in vertical gradients.

Table 6 The K values in Table 6 do not appear to be consistent with the values in Appendix H. How was Aquifer Thickness determined? Why is Aquifer Thickness data provided? How were Total Porosity and Effective Porosity values determined? Clay-Silts would have different hydraulic characteristics than Sand-Silts and should be evaluated as a separate hydrogeologic unit.

Appendix F The blow counts are very low at several of the boring locations. Will this affect soil stability? Has any further evaluation been done for the soils in the wetlands area between Phases 3 and 4 regarding soil stability or foundational analyses? Will some of the soils need to be undercut and backfilled?

Appendix G As previously stated, I am having a little difficulty matching some of the soils analyses data with that in the Tables.

Appendix H Also the slope lines on some of the hydraulic conductivity charts are questionable. (Example: MW-4d)

Appendix I Have the results of the additional Dike Studies been completed?

Mrs. Joan Smyth
Johnston County MSWLF
Design Study - Phase 4A
Page 4

The focus of the Design Hydrogeologic Study is to develop a good understanding of the hydrogeology in order to determine adequate vertical separation buffers and design an effective water quality monitoring system.

It would help to have a Table (and Drawings) that provide information on the vertical separation: including boring locations, ground surface elevations, base grade elevations, seasonal high water table elevations, and top of bedrock elevations.

Since some of the existing monitoring wells have been dry for some sampling events, and since a new landfill area is proposed in the drainage between Phases 3 and 4, further evaluation of the adequacy of the existing monitoring system is needed.

A certification is needed for the proper abandonment of the piezometers. Rule .1623(b)(2)(I).

Please provide the additional information and revisions as outlined above. If you or representatives of G. N. Richardson or Johnston County have any questions regarding this letter, you may contact me at (919) 733-0692 extension 258.

Sincerely,

Bobby Lutfy
Hydrogeologist
Solid Waste Section

cc: Jim Coffey, Solid Waste Section
Ed Mussler, Solid Waste Section
Robert Hearn, Solid Waste Section



CF
FACILITY
JOHNSTON
51-01
51-02

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
William L. Meyer, Director

June 15, 2001

Mr. Rick J. Hester
County Manager
Johnston County
PO Box 1049
Smithfield, NC 27577

Re: Permitting for Johnston County Landfill, Cell 4A and C&D, Permits 5101 and 5102

Dear Mr. Hester:

The Solid Waste Section (Section) of the Division of Waste Management is in receipt of your letter of June 11, 2001. Johnston County has two municipal solid waste landfill facility (MSWLF) permits, 5101 and 5102. The first is for the original, unlined landfill and current C&D operations and the second is for the currently active lined landfill unit, Cell 5.

The County's request for a permit to construct Cell 4A is unique in North Carolina. As such there has been extensive review of the regulatory and policy implications of such an approach. Section Staff have evaluated the proposal and worked with your consultant, G. N. Richardson & Associates, to formulate an approach to this proposed project. All involved are confident that there are no technical obstacles to the plan.

The proposal does, however, have requirements that are procedural in nature. You have a current permit, 5102, for a lined MSWLF. Continued operation and construction at this facility would be under the auspices of the Solid Waste Management Rules 15A NCAC 13B .1600. The proposed development of Cell 4A qualifies facility permit 5101 as a new facility, under the requirements of Rule .1603(a)(1)(E), a substantial change to the waste stream defined in the effective permit.

As a result, the requirements for a new facility (see Rule .1617) must be met by the County. This requires a Site Study. The technical requirements of the site study have largely been met by the county, during previous permitting actions. The Section will let the County know of any minor additions that may need to be updated. The County will need to meet the requirements of Rule .1618 (c)(5), Local government approvals for municipal solid waste landfills. At this time it is also recommended that the county merge the two permitted properties into one facility. Section staff will be available to work closely with your consultant and staff to ensure that the proper steps are presented to your commissioners for action.

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Mr. Rick J. Hester
Permitting for Johnston County
June 15, 2001
Page 2

While the county fulfills its legal obligation under Rule .1618 (c)(5), Section staff will be evaluating the current application with respect to the technical aspects, to ensure that sufficient time will be available for construction of a new cell.

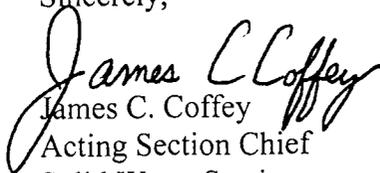
Johnston County has also approached the Section about expanding C&D operations over the closed portion of Cells 1 and 2 at facility 5101. Cells 1 and 2 at this facility ceased accepting waste prior to October 9, 1993, and were closed with a two foot dirt cover. They were not subject to regulation under Subtitle D and the new state landfill rules. Unlined landfill units which accepted waste after October 9, 1993 are subject to the federal Subtitle D rules as well as the current Section .1600 rules of the state. The more stringent rules require minimum specification closure caps, as well as upgraded groundwater monitoring wells and financial assurance for closure and post-closure costs. The Section has considered and approved some placement of C&D materials on these units which fall under the .1600 rules. Currently the cutoff date for this activity is January 1, 2003.

The Section has not permitted expansion or placement of C& D on top of old MSW units, which are not subject to the new rules. The subject is on our list of objectives to study this year. Working in conjunction with the local SWANA group, we will be evaluating the current practice and its effects on groundwater, as well as whether the practice should be expanded or stopped all together, and if it should, or could legally, be expanded to non-1600 rule MSW units.

Consequently the county and its consultant should make other arrangements for future C&D disposal capacity. It is unlikely that the Section can complete its review in time for Johnston County to make appropriate plans. The Section Staff will work closely with county staff and your consultant to evaluate your options.

If you have any further questions, please do not hesitate to contact me. Specific questions about permitting and the current status of the permit application can be directed by your staff or consultant to Ed Mussler , the permitting engineer.

Sincerely,


James C. Coffey
Acting Section Chief
Solid Waste Section

cc; Ed Mussler, DWM
Mark Fry, DWM
Pieter Scheer, GNRA

North Carolina
Department of Environment and Natural Resources



Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
William L. Meyer, Director

March 27, 2001

Mr. Haywood Phthisic
Director of Public Utilities
Johnston County
P.O. Box 2263
Smithfield, NC 27577

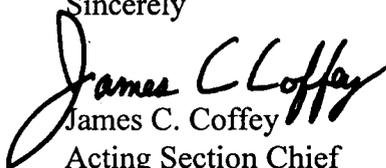
RE: Permit 51-02, Johnson County Landfill- Approval of Leachate Recirculation Plan

Dear Mr. Phthisic,

The Solid Waste Section has received the request for approval of a leachate recirculation demonstration in Phase 5 of the Johnson County Landfill. The Section has reviewed the plan and hereby approves the 120 day trial demonstration. At the end of the 120 day trial period a report shall be prepared for the Section in accordance with the approved plan. The trial period begins when leachate is introduced back into the cell, allowing time for planning and construction. It may continue during report preparation and review, unless you are otherwise informed by the Section. A modified copy of the facility permit to operate is included with this letter.

If there are any questions concerning this approval, please contact Ed Mussler of our office. Our number is 919.733.0692, extension 343.

Sincerely


James C. Coffey
Acting Section Chief
Solid Waste Section

cc: File
Mark Fry DWM
Jim Barber, DWM
Ed Mussler, DWM
Pieter Scheer, GNRA

North Carolina
Department of Environment and Natural Resources

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Michael F. Easley, Governor
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PERMIT 51-02
Part 2 - Permit to Operate
Date of Original Issue: AUGUST 6, 1997
Permit Modification Date: March 27, 2001
Page 1

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT
1646 Mail Service Center, RALEIGH, NC 27699
MUNICIPAL SOLID WASTE LANDFILL

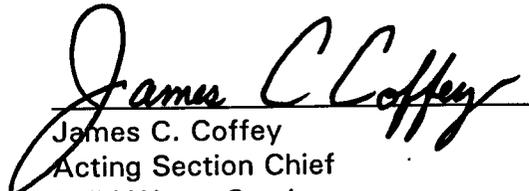
FACILITY PERMIT

JOHNSTON COUNTY

is hereby issued a PERMIT to OPERATE a
MUNICIPAL SOLID WASTE LANDFILL FACILITY

PHASE 5

located on S.R. 1503, Johnston County, North Carolina in accordance with Article 9, Chapter 130A, of the General Statutes of North Carolina and all rules promulgated thereunder and subject to the conditions set forth in this permit. The facility is located and described by the legal description of the site or the map contained within the approved application.


James C. Coffey
Acting Section Chief
Solid Waste Section

ATTACHMENT 3

PART I: GENERAL FACILITY CONDITIONS

PART II: MUNICIPAL SOLID WASTE LANDFILL CONDITIONS

1. Survey "Map for Johnston County" prepared by L.Dennis Lee, Registered Land Surveyor #1-1544, December 28, 1995.
2. *Johnston County Subtitle D Landfill Phase 5, Permit 51-02, Construction Quality Assurance and As-Built Certification for Permit-to-Operate.* Prepared by: McKim & Creed Engineers, P.A., Cary, North Carolina. McKim & Creed Project No.0358-0060.OR. March 1997. 3 Volumes.
3. *Johnston County Subtitle D Landfill CQA, ASBUILTS, and Revised Engineering Plan.* Prepared by: McKim & Creed Engineers, P.A., Cary, North Carolina. McKim & Creed Project No.0358-0060.OR. March 1997. 14 sheets.
4. *Johnston County Landfill, Phase 5, Prmit 51-02, Johnston County, North Carolina, Survey and As-Built Plans.* Prepared and Certified By: F. Donald Lawrence, NCRLS No. L-1290, Monroe, N.C., Provided by: Ground Improvement Techniques, Inc., Contractor, Submitted by: McKim & Creed. March 1997. 7 sheets.
5. Letter Grimes to Fry, Requesting approval of Alternative Daily Cover, Tarpomatic. Includes Brochure. July 27, 1998
6. *Leachate Recirculation Plan. Johnston County MSW Landfill- Phase 5. Johnston County, North Carolina.* Prepared for: Johnston County Department of Public Utilities. 204 S. Second Street, Smithfield, NC 27577. Prepared by: G.N. Richardson & Associates, Inc. Raleigh, NC. May 2000 as amended through February 2001.

ATTACHMENT 4

Conditions of Permit to Operate

GENERAL CONDITIONS

1. This permit is effective for five years from the issuance date of the permit to operate or until the contours as indicated on sheet E-5 of Document 4, Attachment 1 are reached, whichever occurs first.
2. This facility is approved for a five year permitted disposal capacity of approximately 870,000 cubic yards, consistent with the final contours as shown on sheet E-5 of Document 4, Attachment 1. This capacity is based on an average annual disposal rate of approximately 78,000 tons (approximately 250 tons per day based on 312 operating days per year) facility total as set forth in Document 1, Attachment 1.
3. The municipal solid waste landfill facility is permitted to receive solid waste generated by and in the County of Johnston, North Carolina, as defined in 15A NCAC 13B .0101(36), except where prohibited by North Carolina General Statutes Article 9 of Chapter 130A, and rules adopted by the Commission for Health Services. The owner or operator of the landfill facility shall not knowingly dispose of municipal solid waste that is generated within the boundaries of a unit of local government that by ordinance:
 - (a) Prohibits generators or collectors of municipal solid waste from disposing of that type or form of municipal solid waste.
 - (b) Requires generators or collectors of municipal solid waste to recycle that type or form of municipal solid waste.
4. Closure or partial closure of any Municipal Solid Waste Landfill unit shall be in accordance with the approved documents and 15 NCAC 13B .1629. The final closure plan shall be submitted at least 90 days prior to commencement of any closure activities. Closure and Post-closure plans, including Financial Instruments shall be updated annually pursuant to 15A NCAC 13B .1628.
5. In the event of conflicts between this Permit to Operate and previously issued conditions, the conditions of this Permit to Operate shall supercede previously issued conditions.
6. Co-disposal of non-liquid, non-hazardous wastewater treatment sludges shall be in accordance with 15A NCAC 13B .1626(e).

OPERATION CONDITIONS

7. The landfill unit shall conform to all operating procedures described in the approved plans, 15A NCAC 13B .1626, and the conditions specified herein.
8. All pertinent landfill operating personnel shall receive training and supervision necessary to properly operate this landfill. Specifically, training must be provided in operational procedures that will prevent damage to the liner and leachate collection and removal systems.
9. Additional conditions and revisions of the approved documents or changes during operation of the landfill require approval by the North Carolina Solid Waste Section.
10. A leachate recirculation demonstration project is hereby approved. Leachate may be recirculated in accordance with the plan as identified in Attachment 3, Part II, Document 6. Upon completion of a 120 day trial period, a report shall be submitted in accordance with the approved plan. The trial period shall commence when leachate is first recirculated. The 120 day trial period does not include planning and construction time prior to the introduction of leachate into the cell. Recirculation may continue during the report preparation and review phase, unless otherwise directed by the division.
 - a. The use of leachate recirculation as a leachate management tool during the Post-Closure care period requires approval, by the Solid Waste Section, prior to implementation. Additional engineering demonstrations and operational plans may be necessary. Such demonstrations and plans shall be developed, incorporated into the final Closure and Post-Closure plan, and submitted to the Solid Waste Section for approval prior to implementation. Plans which are approved by the Section will be incorporated into, and made a part of, the approved documents found in Attachment 3.
11. The use of alternative daily cover requires approval, prior to implementation, by the Solid Waste Section. Requests for alternative daily cover approval must include a comprehensive use and demonstration of effectiveness plan developed according to Section guidelines and consistent with the approved operation plan. Plans which are approved by the Section will be incorporated into, and made a part of, the approved documents found in Attachment 3.
12. On or before August 1 of each year, the permittee shall report the amount of waste received (in tons) at this facility and disposed of in the landfill to the Solid Waste Section, on forms prescribed by the Section. This report shall include the following information:
 - a. The reporting period shall be for the previous year, beginning July 1 and ending on June 30;

- b. The amount of waste received and landfilled in tons, compiled on a monthly basis and by county or transfer station of origin; and
 - c. The completed report shall be forwarded to the Regional Waste Management Specialist for the facility. A copy of the completed report shall be forwarded to the County Manager of each county from which waste was received.
13. Untreated leachate shall be sampled and analyzed at least semi-annually concurrently with the ground and surface water sampling. The leachate shall be analyzed for all Appendix I constituents, pH, specific conductance, BOD, COD, sulfates, nitrates, and phosphates. Test results shall be submitted to the Section along with ground and surface water test results. In the event leachate is recirculated, additional leachate sampling may be required.

GROUND AND SURFACE WATER MONITORING CONDITIONS

14. Ground water quality at this facility is subject to the "Classifications and Water Quality Standards Applicable To The Groundwaters of North Carolina", 15A NCAC 2L. This includes, but is not limited to, the provisions for detection monitoring, assessment, and corrective action.
15. This facility is subject to the ground water monitoring requirements of 15A NCAC 13B .1630 through .1637.
16. The four independent samples which comprise the initial baseline sampling event shall be collected from each ground water monitoring well and the report shall be submitted to the Section within six months after issuance of the Permit to Operate.
17. A readily accessible unobstructed path shall be cleared and maintained so that four-wheel drive vehicles may access monitoring wells locations at all times.
18. A field log book which details all development, sampling, repair, and all other pertinent activities associated with each monitoring well and all sampling activities associated with each surface water and leachate sampling location shall be kept as part of the permanent facility record.
19. Records of all ground-water, surface water and leachate analytical data shall be kept as part of the permanent facility record.
20. Ground water monitoring wells, surface water sampling locations, untreated leachate, must be sampled for Appendix I constituents at least semi-annually according to the specifications outlined in the approved water quality monitoring plan, 15A NCAC 13B

.1630 - .1637, and the current policies and guidelines of the Section in effect at the time of sampling.

21. Reports of the analytical data for each water quality sampling event shall be submitted to the Section within 60 days of the respective sampling event. Analytical data shall be submitted in a manner prescribed by the Section.



February 20, 2001

Mr. Edward F. Mussler, P.E.
NC DENR Division of Waste Management
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605

**RE: Request for Permit Modification - Leachate Recirculation Plan
Johnston County MSW Landfill - Phase 5 (Permit No. 51-02)
Smithfield, North Carolina
Response to Comments**

Dear Ed:

G.N. Richardson & Associates (GNRA) has reviewed the comments addressed in your letter dated September 5, 2000 related to the Johnston County Leachate Recirculation Plan. Your comments are repeated below in *italics* and our response follows in **bold**. Note that the revised sections (report text, calculations, specifications, & drawings), which are provided as attachments, are dated February, 2001.

1. *Please include in the specifications, provisions for the trench construction activities. Specifically the Section requests that handling of the excavated waste, length of trench to be left exposed at the end of the day and provisions to cover the exposed trench be addressed.*

During trench construction activities, the waste excavated will be disposed of at the working face. A trench section will be left open a maximum of 72 hours for installation of collection pipe. A temporary alternative cover will be used to prevent nuisances and infiltration into the excavation during this period. Following pipe installation and backfill, the area will be covered with a minimum of six (6) inches of daily cover. Please see attached revised specifications (Section 02222 - Excavation).

2. *The wet well for leachate recirculation is a large structure. The Section is evaluating the plan as proposed. The Section is also evaluating the leachate handling well as possibly being an underground storage tank, and subject to regulation under Rule .1680(d). Please address the wet well with respect to leak detection and possible groundwater monitoring, as well as the other requirements of Rule .1680(d).*

The design of the leachate recirculation system has been modified to move the recirculation pump to the existing leachate pump station. Leachate to be recirculated will be routed to the landfill in a 3 inch diameter HDPE force main. This has been done both to address your concerns over the originally proposed wet well and concerns regarding electrical power. The text, drawings, and specifications of the leachate recirculation plan have been modified to reflect this change.

Edward F. Mussler, P.E.
February 20, 2001
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3. *While the application specifically covers leachate recirculation, it is proposed to include an element of landfill gas collection. Are the number and spacing of the holes in the GC pipe sufficient to collect and control landfill gas generation?*

The gas collection lines will have four (4) rows of ½" diameter holes at six (6) inches on center. This hole diameter and spacing has been successfully used by GNRA on other gas collection systems. Please see revised Drawing No. LR3.

4. *Leachate recirculation will increase the quantity and strength of the landfill gas emissions. What are the plans for controlling the gas? What is the status and timetable of the facilities permits and actions required by the Division of Air Quality, under Title V of the Clean Air Act, and the New Source Performance Standards?*

It is planned to use solar powered utility flares to control landfill gas from recirculation trenches. The facility is currently under the 2.5 million Mg limit and does not fall under Title V requirements. It is anticipated that the facility will fall under Title V requirements during operations of the next phase (Phase 4A). A Title V permit application will be made at that time to the Division of Air Quality which will incorporate control measures placed as part of Phase 5 operations.

Should you have any further questions or comments on this submittal, please contact us at your earliest convenience.

Sincerely,
G.N. Richardson & Associates, Inc.



Pieter K. Scheer, P.E.
Project Engineer

Attachments

cc: Haywood Phthisic, Johnston County
Tim Broome, P.E., Johnston County
Rick Proctor, Johnston County