CDM Camp Dresser & McKee

consulting
engineering
construction
operations

5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919 787-5620 Fax: 919 781-5730

50th 1947-1997 Anniversary

October 23, 1997

Mr. William Sessoms, P.E.
State of North Carolina Department of Environmental & Natural Resources
Division of Waste Management
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605

Re: Installation of Spring Drain to obtain Construction & Demolition Debris Landfill Permit
Buncombe County Solid Waste Management Facility

Dear Bill:

In order to satisfy comments in the Solid Waste Section's technical review memorandum dated October 10, 1997 concerning the location of groundwater discharge and springs, we are submitting the following items:

1) Detail of the Spring Drain

2) Plan sheet indicating the location where the Spring Drain will be installed

Also, in order satisfy comments concerning observed rock exposures, the Contractor will proceed with placing four feet of fill over the exposed rock. Please provide confirmation that completion of this work will satisfy the permit condition in question. Should you have any questions concerning this matter, please do not hesitate to contact me.

Very truly yours,

CAMP DRESSER & McKEE

C&D LF

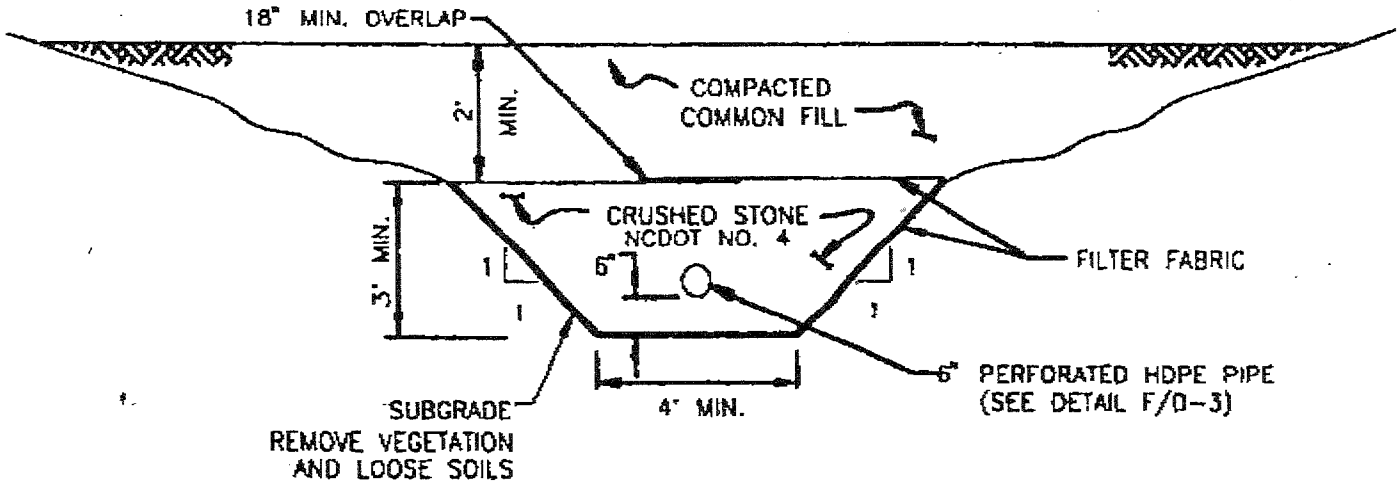
L.B. Garrett, Jr., P.E.

Fac/Perm/Co ID #	Date	Doc ID#
11-07	10 110 2011	DIN 15 3114

Attachments

cc: Bob Hunter
Cheryl Marks
Joe Wiseman

OCT 1997
Received
Solid Waste
Section



CROSS SECTION

FRENCH DRAIN

DETAIL D

NOT TO SCALE

C-7

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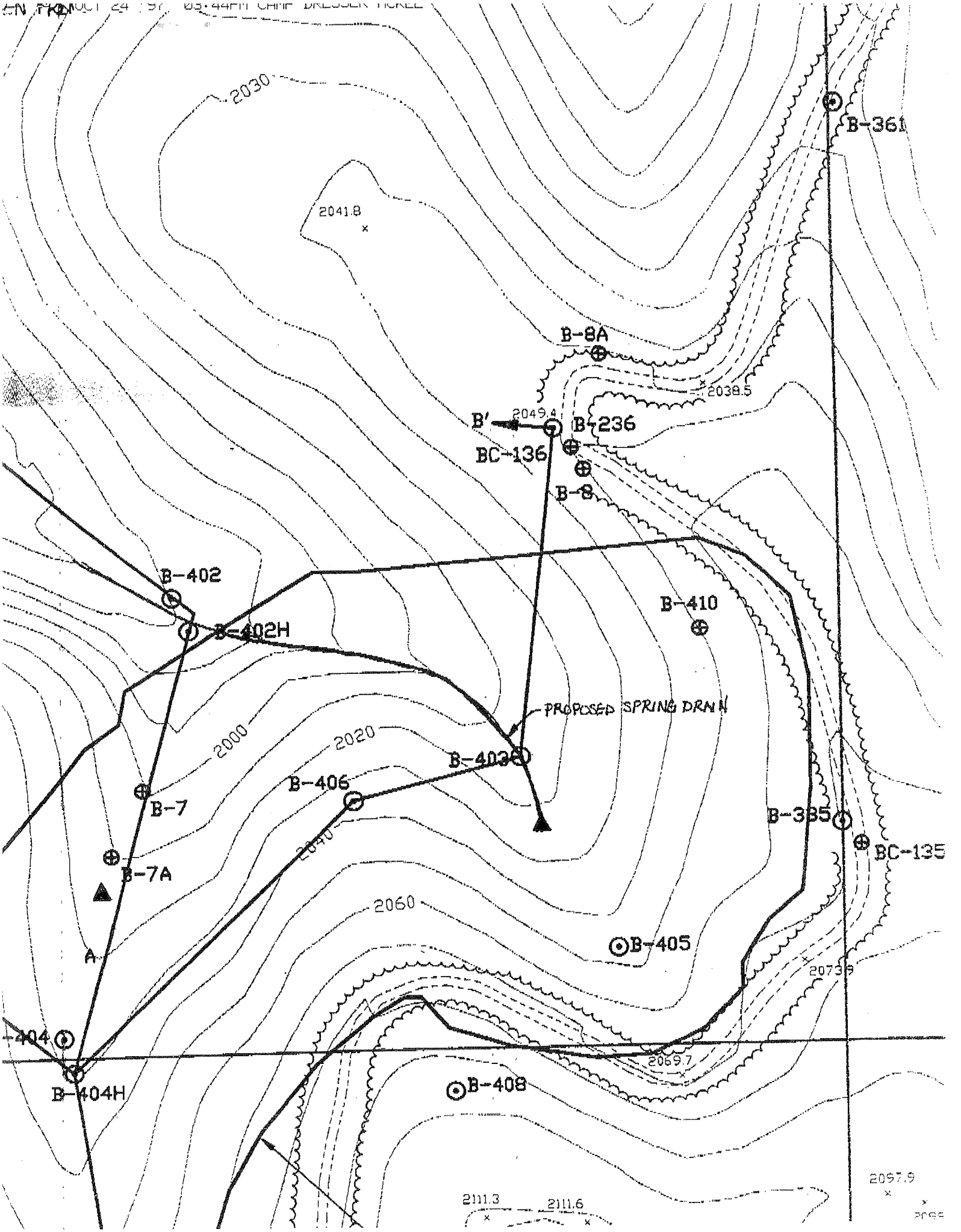
Received
Solid Waste
Section


2030
2041.8
B-361
B-8A
2038.5
B'
2049.4
B-236
BC-136
B-8
B-402
B-402H
B-410
PROPOSED SPRING DRAIN
2000
2020
B-403
B-406
B-7
B-7A
B-335
BC-135
2040
2060
B-405
A
2073.9
-404
B-404H
2069.7
B-408
2097.9
2111.3
2111.6

FAX TRANSMISSION

CAMP DRESSER & MCKEE
5400 GLENWOOD AVENUE, SUITE 300
RALEIGH, NC 27612
919 787-5620
FAX: 919 781-5730

To:	Bill Sessoms cc: Cheryl Marks	**Date:**	October 24, 1997
Fax #:	733-4810	**Pages:**	4, including this cover sheet.
From:	L. B. Garrett, Jr., P.E.		
Subject:	Buncombe County C& D Permit		

COMMENTS:

Letter regarding spring drains

OCT 1997
Received
Solid Waste

October 10, 1997

MEMORANDUM

TO: Bill Sessoms, PE

FROM: Cheryl Marks

RE: Hydrogeologic Technical Review of the Design Hydrogeologic Report - Proposed Construction and Demolition Debris Landfill: Buncombe Co.

A hydrogeologic review for the Buncombe C&D Landfill has been completed. A representative of Camp Dresser and McKee met with the assigned hydrogeologist at the Solid Waste Section on October 3, 1997 concerning site geology. The discussion focused on the complex bedrock and aquifer system relating groundwater monitoring concerns. C&D site characterization was divided into a western and eastern half. The eastern half of the site can be monitored with the proposed nested monitoring wells and the installation of french drains in the two exposed springs in the proposed cell. Further characterization of the western half the C&D site is required. The following questions and comments are also to be addressed for the complete C&D site.

Hydraulic Conductivity and Porosity

Page 14-18: "Based on observation of the cores, an effective porosity of about 1 to 5% has been estimated for the competent bedrock material." Explain methodologies and provide supporting documentation used to determine the effective porosity of the competent bedrock material.

Page 14-20: The middle of the first paragraph states eight samples were used for volume % water to produce an average of 20.6%. What eight samples were used? Provide calculations.

Page 14-22: "Vertical gradients are calculated as the difference in water level elevation between two nested piezometers, divided by the vertical distance from the midpoint of the screen of the shallower piezometer to the midpoint of the screen." What is the reference of the second screen in this statement? Provide calculations for the vertical gradients given.

Page 14-24: Last paragraph discusses previous slug test results from Cells 1-3 area. Most of the borings in the proposed C&D landfill indicate water was encountered in rock. The hydraulic conductivities in bedrock provided are based on testing from the cells 1-3 area that indicate a

great variance ranging from 0.02 ft/day to 47 ft/day. While this provides good support information, the saturated hydraulic conductivity for the hydrological study of the C&D site as noted .0504 (1)(c)(i)(E)(I) also requires testing for each major lithologic unit. Include the results of slug test(s) performed in the C&D area.

Sheet 14-5: It is unclear which groundwater data belongs to piezometer B-335 on the potentiometric map.

Water Discharge

Page 14-25: The groundwater discharge location identified in the C&D Landfill area is not shown on any of the sheets submitted. Submit a revised sheet showing the discharge location. Two springs were observed in the foot print of the C&D Landfill cell during a recent site visit by the Solid Waste Section staff. If both springs in the C&D Landfill foot print are different than the one previously observed, they also need to be included on a revised sheet.

Page 14-26: Provide the location of the intermittent stream that flows in the western drainage feature which may be groundwater discharge from the saprolite.

Landfill Construction Considerations

Page 14-26: The first bullet under landfill construction considerations discusses the separation between the base of the landfill and the water table surface. It is the policy of the Solid Waste Section that four feet of separation also be maintained to the top of bedrock. Several rock exposures were observed in the proposed C&D landfill footprint during a recent site visit by the Solid Waste Section staff.

Provide a discussion to restore the subgrade to the required four feet of separation to the top of rock.

Water Quality Monitoring Plan

Include a sheet showing the proposed monitoring wells and surface water locations for the C&D Landfill.

Provide a groundwater monitoring well schematic showing proposed screened interval, and construction.

Sheet 15-1: Explain the construction to the south of the proposed C&D Landfill shown on the groundwater monitoring plan.

Sheets

On a sheet provide the paths of the geological cross-sections A-A' and B-B'.

Sheet 14-1: The legend does not provide an explanation for the heavy lines with arrows in the northeastern portion of the map located east of cell 3.

Tables

Table 14-1: There are discrepancies between Table 14-1 and the boring logs presented in Appendix B. Generally the screen is set as near to the bottom of the boring as possible. Explain why B-365, MW-5d, MW-7, and B-404H have 2.5 feet or more difference between the bottom elevation of the boring and the bottom elevation of the screen. What fill materials, if any, were used to confine the conduit created.

Table 14-2: Boreholes B-5, B-5A, and B-358 on Table 14-2 do not have logs included in Appendix B.

Table 14-3: The remolded conductivity listed on table 14-3 does not match the text on page 14-20.

Western Portion of the C&D

The C&D Landfill site has a complex aquifer system. The Lineament/Fracture Analysis & VLF Survey indicate lithologic contacts in the southwestern portion of the C&D cell that may control groundwater flow. Rock characterization for the western portion needs to be more detailed. Complexity of the geology appears to be greater in the western portion since there is a change in rock type and groundwater flows in rock. The lithologic change may be a function of an isograd which either should be confirmed or dispelled. Include other relevant field data concerning the rock, strike and dip, jointing and foliation trends and any additional information gathered from cores. Explain how these features relate to the aquifer system. Additional monitoring wells in the fractured bedrock are required to adequately monitor the complex system.

An extended amount of time may be required to complete the additional characterization of the western portion of the C&D site. The C&D site will be divided into two phases in order to facilitate the permitting process. Permitting of the eastern portion (phase 1) will take place after review comments are satisfactorily addressed. Extended time will be given to the western portion (phase 2) to allow adequate time to properly characterize the C&D site. Camp Dresser and McKee may call me regarding this memo, at (919) 733-0692, extension 346.

cc: Bobby Lutfy

Post-it® Fax Note 7671	Date 10-9-97	# of pages ▶ 3
To Tim Grant	From Cheryl Marks	
Co./Dept. CDM	Co. Solid Waste Sec.	
Phone # 787-5620	Phone # 733-0692 Ext 346	
Fax # 781-5730	Fax #	

October 10, 1997

MEMORANDUM

DRAFT

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FROM: Cheryl Marks

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