



MA

# Sanborn, Head & Associates

Consulting Engineers & Scientists

June 25, 1996  
File No. 1003.2

Pamela H. Sprague  
Section Supervisor  
Waste Management Engineering Bureau  
Waste Management Division  
New Hampshire Department  
of Environmental Services  
6 Hazen Drive  
Concord, New Hampshire 03301



Re: Application of Sodium Bromide  
North Country Environmental Services  
Bethlehem, New Hampshire  
Permit No. DES-SW-89-009

Dear Ms. Sprague:

At the request of North Country Environmental Services, Inc. (NCES), Sanborn, Head & Associates, Inc. (SHA) has revised the facility operating plan to incorporate the sodium bromide application procedures as identified in the May 28, 1996 Operating Approval for NCES Stage II, Phase I. The sodium bromide application requirements are presented in Section 3.12, a new section to the operating plan. This new section is attached and should be inserted into the operating plan as Page 28A.

Should you have any questions or comments, please do not hesitate to call.

Very truly yours,  
SANBORN, HEAD & ASSOCIATES, INC.

R. Scott Shillaber, P.E.  
Principal

|                              |              |
|------------------------------|--------------|
| TOWN:                        | BETHLEHEM    |
| PROJECT:                     | NCES STAGE 2 |
| LETTER/DATA/PERMIT/FA/OTHER: |              |

RSS:las  
Attachment

cc: Larry Lackey, NCES  
Bob Watts, NCES

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Paul M. Sanborn ■ Charles L. Head ■ R. Scott Shillaber  
Charles A. Crocetti ■ Gregory R. Morley ■ Mathew A. DiPilato ■ Daniel B. Carr

Sanborn, Head & Associates, Inc.

6 Garvins Falls Road, Suite 1 ■ Concord, New Hampshire 03301  
Fax (603) 229-1919 ■ Phone (603) 229-1900

### **3.12 Application of Sodium Bromide in Stage II**

To provide a means of distinguishing between existing leachate constituents in groundwater attributed to the unlined landfill from releases from the double-lined Stage II base area, bromide will be used as a tracer in the Stage II leachate. It is proposed to create a leachate with a bromide concentration of between 30 and 300 parts per million (ppm) by applying sodium bromide to the waste fill. The bromide will be mixed with water to facilitate its introduction and passage into refuse.

Prior to filling in a cell, 20 pounds of sodium bromide in solid form will be spread over the base area. Thereafter, sodium bromide will be added once a week to the area which received waste in the last 7 days at a rate of 20 pounds per week, unless WMD approves modification of the rate as discussed below. The sodium bromide will be mixed on the landfill at the rate of 2 pounds to the gallon in a tank sprayer and sprayed within the active area above the Stage II base area. Sodium bromide will not be sprayed within 25 feet of the active cell's perimeter berms or the edge of the landfill once filling has progressed above surrounding grade.

The material will be stored in a portable watertight shed located on the landfill near the working face. The material will be mixed on the landfill to limit the likelihood of spills which could impact groundwater conditions outside the landfill. Landfill operating personnel will be instructed as to the importance of spill prevention and handling the material in a manner which prevents wind blown discharge. These measures will be taken to limit the potential for a release.

To monitor the effectiveness of the sodium bromide application, samples will be obtained from the primary and secondary leachate collection sumps in Stage II on a monthly basis for analysis for bromide. The application rate will be increased or decreased as required to produce a bromide concentration in the leachate ranging between 30 and 300 ppm. Adjustments to the bromide application rate can be made to achieve the target concentration of bromide of 30 to 300 ppm, with WMD approval following the third month of sampling.

Records of applications of sodium bromide and the results of analytical testing will be maintained at the facility as part of the operating record and made available to NHDES on request. A summary of the application records and analytical results will be included in the annual solid waste management report for the facility prepared in accordance with Env-Wm 311.07.



State of New Hampshire  
DEPARTMENT OF ENVIRONMENTAL SERVICES

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July 9, 1996

Mr. Larry B. Lackey, P.E.  
North Country Environmental Services, Inc.  
501 South Street, Box E, Suite 302  
Bow, New Hampshire 03304

**Subject: NCES Stage II - Phase I/ Permit No. DES-SW-89-009  
Revision to Facility Operating Plan - Sodium Bromide Application**

Dear Mr. Lackey:

The Department approves the revised Operating Plan, dated 06/25/96, relative to the application of sodium bromide that will be used as a tracer in the Stage II leachate. The revision follows Item 4 of the Terms and Conditions of the Operation Approval from the Department, dated 05/28/96. This revision is designated Section 3.12 and has been inserted into the Operating Plan as page 28A.

Please contact John Cotton at 271-2936 if you have any questions.

Sincerely,

Pamela H. Sprague, Section Supervisor  
Waste Management Engineering Bureau  
Waste Management Division

cc: PA&DRS files  
SWCS  
WSPCD-GPB  
PIP  
Town of Bethlehem  
SW District  
Sanborn, Head & Associates, Inc.

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KH: FYI / file  
TOWN: BETHLEHEM  
PROJECT: NCES - STAGE II LE  
LETTER/DATA/PERMIT/FA/OTHER: \_\_\_\_\_

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