

STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: January 25, 2007
AT(OFFICE): P&DRS



FROM: Wayne Wheeler, P.E.
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Permitting & Design Review Section

SUBJECT: NCES/Bethlehem, New Hampshire/DES-SW-SP-03-002

TO: Michael E. Guilfooy, P.E.
Administrator
Solid Waste Management Bureau

The following is a brief overview of the permitting and compliance issues at the North Country Environmental Services (NCES) landfill:

A. Compliance Deficiencies

The last enforcement action was a letter of deficiency was issued by the Department on April 18, 2006 for (a) waste haulers parking on Trudeau Road and Route 3 prior to the opening of the Facility and (b) the Facility's access gate being left open outside of operating hours. A letter of compliance was issued by the Department on July 10, 2006.

At the present time, there is one outstanding compliance issue. (See item B, below)

B. Waste Disposal Investigation

A disposal issue at the landfill has been referred to the Attorney General's Office for enforcement. According to court documents, NCES accepted asbestos in violation of their permit from the Mountain View Grand Hotel demolition.

C. Waste Acceptance Rate

1. A total of 13,549 tons of waste was accepted at the landfill in November 2006. A total of 675 tons (5%) was received from out-of-state (VT).
2. A total of 12,061 tons of waste was accepted at the landfill in December 2006. A total of 1,129 tons (9.4%) was received from out-of-state (MA & VT).

D. Odor Complaints

1. Three odor complaints were received in January 2007 due to mechanical problems with the open flare.
2. During the last few months there have only been one or two complaints a month.

E. Capacity

1. In November 2006 the landfill had a capacity of 526,741 cubic yards. The estimated life of the landfill, as presently permitted, is approximately 3 years.

2. NCES is anticipating submitting a permit modification to increase the life of the landfill to approximately 10 years.

F. Leachate

1. There are a couple of secondary leachate issues that the Department is watching, but the issues are not at a level which requires NCES to conduct an investigation (over 100 gallons per acre per day).
2. During the month of December 2006, a total of 152,371 gallons of leachate was evaporated and a total of 469,672 gallons were trucked to the Concord, NH and Montpelier, VT wastewater treatment facilities.

G. Air Resources Division (ARD) Permitting and Compliance Issues

1. A Title V permit application has been received from NCES. Items 2 and 3 below are being conducted in support of the Title V permit process
2. Enhanced Monitoring Protocol and Standard Operating Procedures for landfill gas monitoring and testing at the landfill have recently been approved by the ARD. The purpose of the Protocol and Procedure is to ensure that the landfill gas collection system is operating as efficiently as possible. The ARD also recently approved an Air Dispersion Modeling Protocol. The Protocol was necessary for air dispersion monitoring of the flares and landfill emissions. The monitoring will calculate the landfill's impact to the air.
3. The ARD has been receiving and following up on all air related complaints from the residents of Bethlehem.
4. The ARD is currently investigating complaints regarding flames from the enclosed flare.

H. 2007 January NCES Water Quality Monitoring Statement

The present facility is a double lined landfill comprised of 4 stages. Previous owners had operated an unlined landfill. All waste and contaminated soil within the unlined landfill was removed and placed in Stage I of the double lined landfill. Stage II was then constructed within the area of the former unlined landfill.

Because of the site history, the Department issues a combined groundwater management permit (to monitor improvement of water quality impacts associated with the former unlined landfill) and release detection permit (to monitor for potential releases from the double lined facility). This permit requires water quality measurements from 36 monitoring wells, one large spring, surface flowage from that spring, three small springs and three sites on the Ammonoosuc River.

Only minor impacts to water quality have been associated with the double lined landfill. Low concentrations of several volatile organic compounds (VOCs) have been detected in a release detection monitoring well near where stored leachate is loaded into tank trucks and in two other wells within the area of underground leachate transmission lines and

storage tanks.

Major degradation of water quality was associated with the former unlined landfill. Remediation of those impacts has been naturally occurring since the removal of that landfill.

Severe impacts to groundwater quality beneath and down gradient of the unlined landfill were also present where groundwater discharges at a large spring (generally referred to as the Main Seep) located about 250 feet north of landfill property on a terrace scarp above the southerly bank of the Ammonoosuc River. Because impacts to water quality extended beyond landfill property, the Department required that the groundwater management zone (a component of the management permit) also extend northerly offsite to the bank of the Ammonoosuc River.

The major impacts to water quality from the unlined landfill were caused by release of volatile organic compounds (VOCs) and by an increase in concentrations of three dissolved metals (iron, manganese and arsenic). While the waste contained these metals, perhaps the majority of the metals were naturally occurring in the soil beneath the waste. Leachate from the landfill consumed oxygen present both within the waste and in groundwater beneath the waste and the altered geochemical balance in groundwater resulted in mobilization of the metals.

The quantity of VOCs in groundwater (and discharge at the Main Seep) increased dramatically in response to disturbance of waste during removal of the unlined landfill that lasted from December 1991 to October 1993. Peak concentrations of VOCs in impacted monitoring wells occurred in 1994 and at the Main Seep by mid 1995. Equally dramatic reduction of VOCs occurred during 1996 and 1997. Two or three VOCs at very low concentrations are now measured at the wells. Since 1998 VOCs generally have not been detected or have been present in very low concentrations at the Main Seep.

Concentrations of iron and manganese in unlined landfill management wells were elevated when first measured in 1984. Concentrations increased through the early to mid 1990's and have generally decreased since the mid to late 1990's. However, concentrations remain significantly elevated. Arsenic concentrations (although much lower than iron and manganese) were generally elevated when first measured in 1990 and since then have generally mirrored the trends of iron and manganese.

Arsenic was detected only once in 1990 at the Main Seep. Concentrations of iron and manganese at the Main Seep were elevated when first measured in 1984. Concentrations generally increased through 1997 and now have decreased to about mid 1984 levels. With landowner's permission plans, are under consideration to remove the iron and manganese hydroxide deposits at the Main Seep and along the flowage to the Ammonoosuc River.