

Beyond 30 Years

Managing the Future Today



Panelists

- Mirka Januszkiewicz P.Eng. – Municipality of Durham
- Robert Mutch, P. Hg., P.E. – Mutch Associates
- Robert Phaneuf, P.E. - NYSDEC
- Bradford Smith, P.E. – GHD
- Mark Swyka, P.E. – Cornerstone Environmental

Overview

- In 1991 the USEPA promulgated regulation requiring landfill facilities to plan for 30 years of care after facility closure. It is now 2014, 23 years since the institution of the USEPA requirement and we are beginning to see facilities reach the end of the 30-year post-closure care period. Now what!?

The Burning Question

- When does a solid waste landfill cease to require care?
 - A. When waste acceptance ceases?
 - B. 30 years after final capping?
 - C. When it has been determined that the waste is no longer a threat to the environment or the public?
 - D. When waste is biologically and geotechnically stable?
 - E. When Bob Phaneuf retires?
 - F. Never?

Question 1

- As an industry, post-closure planning is required for 30 years after capping. Is 30 years the appropriate length of time for the landfill post-closure period?

Question 2

- What aspects of landfill maintenance and monitoring are most significant beyond 30 years of post-closure?

Question 3

- Are the challenges associated with longer-term post-closure maintenance and monitoring purely financial?

Question 4

- What are some concrete ways to reduce annual post-closure maintenance and monitoring costs?

Question 5

- Should revenue from beneficial end uses such as landfill gas to energy or solar park developments be used to fund post-closure care?

Question 6

- Under what circumstances can a facility realistically transition from active leachate collection and treatment to passive treatment (i.e. a permeable reactive barrier [PRB]) and/or monitored natural attenuation (MNA)?

Question 7

- Are there viable ways to reduce the concentration of particularly troublesome leachate constituents *in situ* (i.e. within the landfill)? This question is specifically aimed at those constituents that might restrict one's ability to transition to a more passive leachate management approach.

Question 8

- For those landfills that have been closed and re-purposed for alternate use, predominately recreational uses, what observations have been made as to the stability and/or changes experienced overall?

Question 9

- How would reducing the organic waste fraction within landfills affect:
 - A. The long-term environmental impact of the landfill?
 - B. Planning for future post-closure care?

Question 10

- To what extent have you seen “bioreactor” or “sustainable” landfill concepts and operations been incorporated into New York State landfills?

Question 11

- Can Passive post-closure systems – gravity, wind and/or constructed wetlands – replace active environmental management systems?

Question 12

- Relative to landfill end use:
 - A. Which end uses should be encouraged?
 - B. Which end uses should be avoided?

Question 13

- Exposed geomembrane covers have been proposed as a lower cost alternative to traditional prescriptive final covers. When looking at the service life of exposed covers relative to the post-closure period, do lower cost covers result in a long-term reduction in closure and post-closure care cost?

Question 14

- Can we be confident in our ability to accurately predict landfill plume behavior under Monitored Natural Attenuation (MNA) conditions?

Question 15

- Can we be confident in our ability to accurately predict the performance of a landfill leachate Permeable Reactive Barrier (PRB) before full-scale implementation?

Question 16

- What steps can we take to enhance our confidence in the results of Monitored Natural Attenuation (MNA) or Permeable Reactive Barrier (PRB) modeling *before* turning off the leachate pumps?

Question 17

- For those landfills that have been closed for 30+ years, what observations can be made generally to their stability and environmental impact

Question 18

- Has anyone ever dug up a groundhog hole to see if they go under a the liner, or just skim the upper soil layers? If they do go below the membrane, has anyone noticed a measurable impact?

Question 19

- For those municipalities that are going to “be in the business” and won’t be going away (I think this means dissolving, going bankrupt, etc.) what options may be available to reduce financial assurance obligations for older cells?

Question 537

- For those facilities that are nearing the end of their original post-closure obligation period (be it 30 years or otherwise) at what point will they be notified if/when it is determined that 30 years wasn't long enough and how will that be handled from a financial assurance standpoint?

Question

These are more observations of “old” landfills that could be raised as “do other facilities see what I see?”

1. Cap settlement is much more significantly with earthen caps as compared to membrane caps.
2. Leachate generation quantities decline to very low levels.
3. For a cell with a membrane cap, “significant” gas generation continues longer than “significant” leachate generation.
4. Methane quantities can drop to levels incapable of supporting a flare.
5. Measurable groundwater impacts remain, but shift to only show in the shallow monitoring wells.
6. Leachate collection piping becomes more susceptible to bio-rock hardening when liquid levels allow the collection system to dry out, necessitated more frequent line cleaning to maintain liquid movement.

Question

These are more related to potential remediation/reuse of old cells. Not sure how directly these apply to the discussion ...

- For those facilities that have been excavated for removal and remediation of the historic waste, what provisions have been made to minimize leachate generation, provide for leachate collection and disposal, and provisions for odor control?
- For those landfills that have been excavated for removal and remediation, and for which new liner system is installed for re-using the site for new waste placement, what requirements are there for hydrogeologic investigation, groundwater monitoring, and monitorability as it applies to existing and/or new groundwater monitoring wells servicing the new liner system?
- Should a 30+ year closed landfill be excavated for removal and remediation, and should unacceptable wastes be uncovered during this remediation, including hazardous wastes and/or radioactive material, is the facility owner/operator obligated to fully remove all unacceptable material, or may the landfill remediation be halted and a cap reinstalled. Under such a scenario, will the groundwater monitoring requirements revert to newly closed landfill monitoring standards, or will the environmental monitoring requirements revert to those in place prior to remediation?