

**Questions are highlighted in blue text*

ROUNDTABLE INTRODUCTION

- Topic was selected based on the identified needs from NHDES – limited staffing to monitor all town landfills
- Turnover with select boards can be a challenge when managing closed landfills because it is not always a priority

GUEST PRESENTATIONS

Fred Bickford; HydroSource Associates Inc.-

- Routine monitoring is required for closed landfills – Sandwich is now monitored every 2 years.
 - Sampling can last for 10 days in a row to determine true measurements
- Major function for those who monitor sites is to interpret the data
 - Should know when to flag issues and inform DES
 - Ask yourself: what are the general trends that your data is showing?
- Sandwich site has 2 capped areas – main area and burn area
 - Property is currently used as the town transfer station
- Well layout and water table contours – need at least 1 upgradient monitoring well and 1 downgradient well
 - Determine the flow direction of the water table to monitor potential contamination in suitable testing areas
- With confirmation from DES, it could be reasonable to monitor less often if trends show a decrease in contaminants
- Engineering features added to maintain the site – i.e. large boulders between roadway and cap to avoid driving and walking over the area
 - Additional features help limit and divert the water leachate on the site (berms)
- Permit sample – shows monitoring locations, sampling frequency and parameters
- **Do organic compounds need to be evaluated?** VOCs were analyzed but can be expensive – done more frequently in the past but Sandwich site show no problems with organics. Testing is site dependent, should be evaluated once every few years
- **How long do you have to test the parameters?** Depends on the site – should be monitored indefinitely to know if there is any liner degradation
 - Initial monitoring costs may be higher and more frequent at first but will decrease over the years

What's being tested?

- Iron and manganese tend to trend together
- Conductance, pH, PFAS (emerging contaminant) and water level
- Over 3,000 types of chemicals are considered PFAS (found in firefighting foam, sunscreen, rain jackets, microwave popcorn bags, etc.) – PFAS keeps things from sticking

- EPA is trying to determine the indicators of PFAS so all 3,000 chemicals do not need to be sampled. Standards will be developed with research
- **Are any transfer station people doing these tests?** Different people are doing the testing. A town resident or a DPW employee may be sampling.
- **Is there a certification that people need to sample?** Stamps and certifications through engineering or lab experience are helpful – there is no required state certification. The procedures need to be followed properly. If the representatives have some training and the sample is stored/shipped properly, then lab will accept it as a quality sample
- **How does DES know that the person sampling the well is certified to do it?** DES does not oversee this, but annual reports generally deal with a consultant to ensure they are up to standard
 - Eastern Analytical offers sampling services and reporting
 - DES solid waste rules don't designate a certain person to take the samples
 - PFAS sampling is not recommended without some specific training. In future regulations, there may be a certification requirement needed

Town sample/reporting methods:

- Tuftonboro – outside consultant is hired and does all testing & reporting
- Tamworth – Conservation commission monitors the gas vents, consultant tests water > send to HEB who sends annual report to NHDES.

Don Watson; NHDES –

- 2 permits: 1) groundwater management and 2) solid waste (post-closure) permit – sent to separate locations and DES evaluates both to determine overall site status
- 2 main questions: 1) Why does your old closed landfill matter? 2) How do I take care of it?
- Approximately 300 closed landfills in NH – about ½ not visited or reported
- Gas rises and goes sideways to find path of least resistance – gas probe
- Escape of gas through cap – gas vent
- Rainwater leaches into water table – groundwater well
- About 6 or 7 closed, unlined (bottom) landfills in NH
- Protect your towns investment to avoid more maintenance costs – follow the post-closure plan
 - Solid waste rules outline plan steps for testing, mowing, inspections, etc.
- Annual report is a check-list for twice a year inspection – inspections not submitted each time.
 - Annual report is a combination of test results from inspections
- General Site Condition Questions: Is signage legible? Are roads in good conditions? Can you get to the wells, streams, gas vents? Are there other activities occurring at the facility? Is access restricted?
- Note action items and determine a plan for fixing (i.e. – illegible landfill sign, unsecured groundwater monitoring well, open fence for trespassing, vandalism, inaccessible monitoring systems covered by vegetation)
- Use walls, berms, culverts, detention basins for stormwater management
 - Detention ponds need to filter/drain within 72 hours of rain event
- Active systems pump out gas (methane extraction wells) vs. passive systems (gas vents)
- Air quality monitors should be used and working – gas travels to nearby buildings

- **LEL – Lower Explosive Limit** > defines flammability band
 - Notify NHDES immediately
 - If 5% of the air volume is methane, you have maxed the 100% LEL
 - *Lean* > *Explosive* (extremely dangerous) > *Rich* (not enough oxygen to explode)
- Check cap for ponding on top (should be uniform)
- Mow cap to avoid larger vegetation from growing – look for evidence of erosion – inspect for burrowing animals
- Iron bacteria naturally occurs – can look oily or orange in water.
 - Groundwater flows under landfill & is starved of oxygen. When water is exposed at the surface water it turns orange from a chemical reaction to oxygen – observe and note for patterns or anomalies
- Identified emerging contaminants may require a permit change
- Performance standards are outline in state regulations and need to be met. Garbage is always there so it will always be a concern.
 - Stops generating leachate, methane gas, achieved maximum settlement, removed harmful impacts to air, water and threat to human health & environment
 - Factors can be hard to completely
- DES is making a general permit for maintenance care – basic permit for protecting the integrity of sites meeting the performance standards
- Reports are public information – call DES for historic documents or check OneStop Database
- Rules require 2 inspections a year – water quality may not be tested 2x a year (depends on groundwater permit)
- Authorized agent of the town needs to sign the report and stamp (select board, town admin, etc.) – consultant is not authorized

SUMMARY AND DISCUSSION

- **How do communities know of their responsibilities? Are there notices?** Not at the moment.
- **What are the consequences of not reporting? (Unaware or neglecting)** –
 - Enforcement method outline to help towns comply
 - Reminder from solid waste department will be sent out if not completed
 - Formal request with tracking number
 - Administrative order (legal action) – must comply by a set date.
 - Fine
- **Are there any standards yet for the allowable amounts of PFAS? Is state requiring testing?** PFAS compounds should be tested at all landfills (9 tested, 2 have standards) – subject to change with more research
 - Testing applies to domestic and landfill wells – standards are the same for both well types in NH (7 parts per trillion)
- **Do we have the right people in the room for this discussion?** LRPC plans to do sub-region workshops. Select board members should come. TS reps gather the information but have limited influence on action
- DES plans to send out a once a year e-blast to town representatives (by 2020) - Information will help people prep for closure process.