

**Comments – February 7, 2022 ISOSWO TAC/IDNR Meeting**  
**Ending Post Closure Care**  
**Groundwater Monitoring/Quality Considerations**  
Todd Whipple 2-9-2022

Mike – My opinions/observations are as follows:

Organic Stability versus Functional Stability

The concept of Functional Stability seems to be the overarching principal behind the concept of the sanitary landfill and the 1970-present rules that have been put in place to manage wastes in the USA. If Organic stability had been the overarching principal behind waste management, incineration and digestion would be the primary waste management methods in the USA.

The sanitary landfill is the functionally stable means by which waste is stored/treated until organic stability is eventually achieved. It seems that “sanitary” and “functionally stable” might be synonyms in concept. Let’s bury the waste, keep the rodents out, give it some space to decompose, give it some time to decompose, keep groundwater away, keep people away, and eventually the waste will be inert and risk free.

I’d surmise that on some level (subconscious or loosely scientific) lawmakers felt that a 30-year post closure period would generally be enough time to gauge whether things were holding to a steady-state before there would be any comfort that human health and the environment were indeed protected for the remainder of decomposition period (to organic stability).

If this summary represents reality, then it would seem appropriate that the metrics used to end post closure care would also be based in functional stability (the low maintenance trajectory to organic stability).

Data Collection/Trends/Fate and Transport/Risk

Your point seems valid to me that we will undoubtedly have 5 and 15 years’ worth of data on hand in most cases before moving into or out of post closure care. I’m of the opinion that water quality data collected when the landfill is open and receiving waste might represent “worst case” since water infiltration and gas generation will likely be higher than what is realized in the closure/post-closure care period. If there are not water quality issues based on the “worst case” conditions, then the potential for water quality issues in the closed condition aren’t anticipated to be greater (generally speaking if gas is managed).

I’m not especially concerned that the aforementioned 5 & 15 years timeframes look prescribed. Intrawell statistic generally “need” a minimum of 13 rounds of semi-annual data (6.5 years) to be fully robust. Clearly, there needs to be sufficient data on-hand to draw conclusions. A specific timeframe doesn’t need to be prescribed per se since the reality is that we will be needing 7-10 years’ worth of data regardless. The more data we have on-hand that covers both opened and closed conditions is a benefit moving forward.

Fate-transport and risk are obviously based on site-specific conditions. In most cases the site-specific conditions will be identified and quantified over the operating life of the facility as will any complete risk exposure pathways and won’t come as a surprise in post closure.

### Sites with Remedial Action/Remedies in Place

On face value, it seems that “active” systems and “passive” systems are required to be considered separately (or maybe sequentially). Any of the “active” system operation/maintenance requirements would seem to dictate a need to be included in the Environmental Covenant to ensure long-term oversight. However, it seems that a “passive” system would fall in the same vein as any other functionally stable concepts or systems (once proven) and would not have any operational or maintenance requirements following the end of post closure care (would have no requirements in the Environmental Covenant).

The entire sanitary landfill can be considered (in concept) to be a monitored natural attenuation (MNA) treatment system, designed to decompose waste to organic stability. Federal rules allowed the treatment plume dimension to be 150 meters (492 feet) at a maximum from the waste mass, in lowa the plume length is reduced to 50 feet.

If the entire sanitary landfill can exit regulation based on demonstration of functional stability, then it follows that any passive MNA remedial system (functionally stable by definition) should also be allowed to exit regulation (as long as the entire plume is owned by the landfill) without oversight in the Environmental Covenant.

It seems that active systems would need to be shut down and converted to passive systems first, then once passive, the system could be considered with regard to its functional stability (like the MNA remedial system described above). The crux of this issue is how long the passive version of the previously active system needs to be evaluated to be considered functionally stable.

### Well Abandonment Upon Rescinding the Permit

Based upon risk alone, it seems appropriate to plug and abandon monitoring wells when the permit is rescinded. Monitoring wells will quickly become overgrown and lost over time if the area around the well head is not maintained.

Retaining a well “just in case it is ever needed” seems to come with both real costs and real potential liabilities that will far outweigh the potential savings if there were ever a need to perform an assessment at some point in the future (this seems unlikely). Chances are also good that an existing well may not necessarily be located optimally to perform a future assessment anyway.