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### The Applicative Potential of Using Superabsorbent Polymers to Absorb Leachate

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# The Applicative Potential of Using Superabsorbent Polymers to Absorb Leachate



PRESENTER:  
**Eleonora Recio**

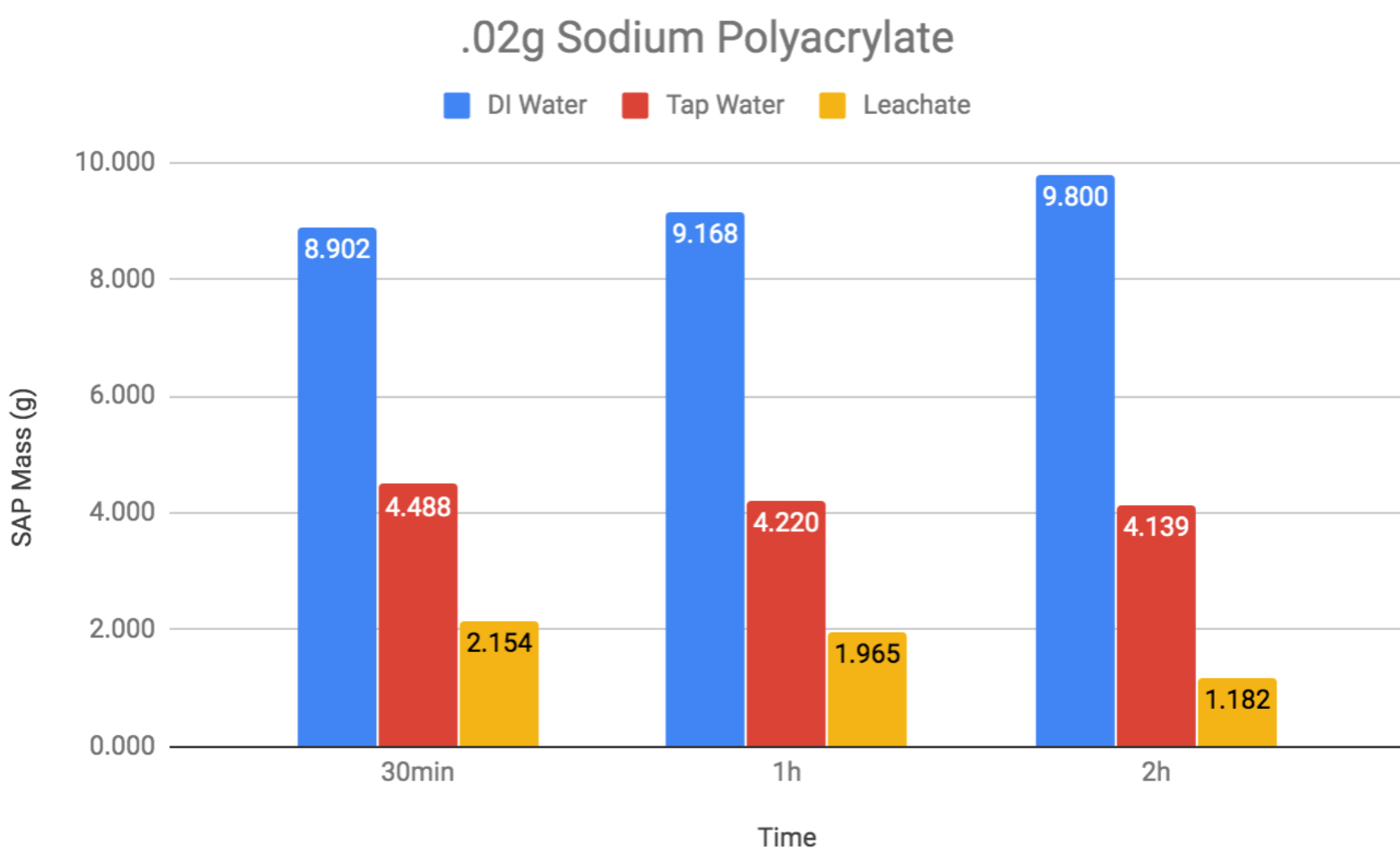
**BACKGROUND:** Modern landfills are designed to stay dry inside, but some liquid from precipitation and garbage inevitably leaks through and dissolves with chemicals and other constituents into a highly toxic soup called leachate. Leachate is contained within then landfill by a protective liner, but it degrades and breaks down over time. This can result in groundwater and soil contamination.

## METHODS

1. Tested 4 superabsorbent polymers (SAP) in 3 different liquids- distilled water, tap water, and leachate, using the teabag method
2. Repeated the process above using the sieve, vacuum, and AUL method
3. Recorded the leftover SAP mass and swelling capacity after a span of time

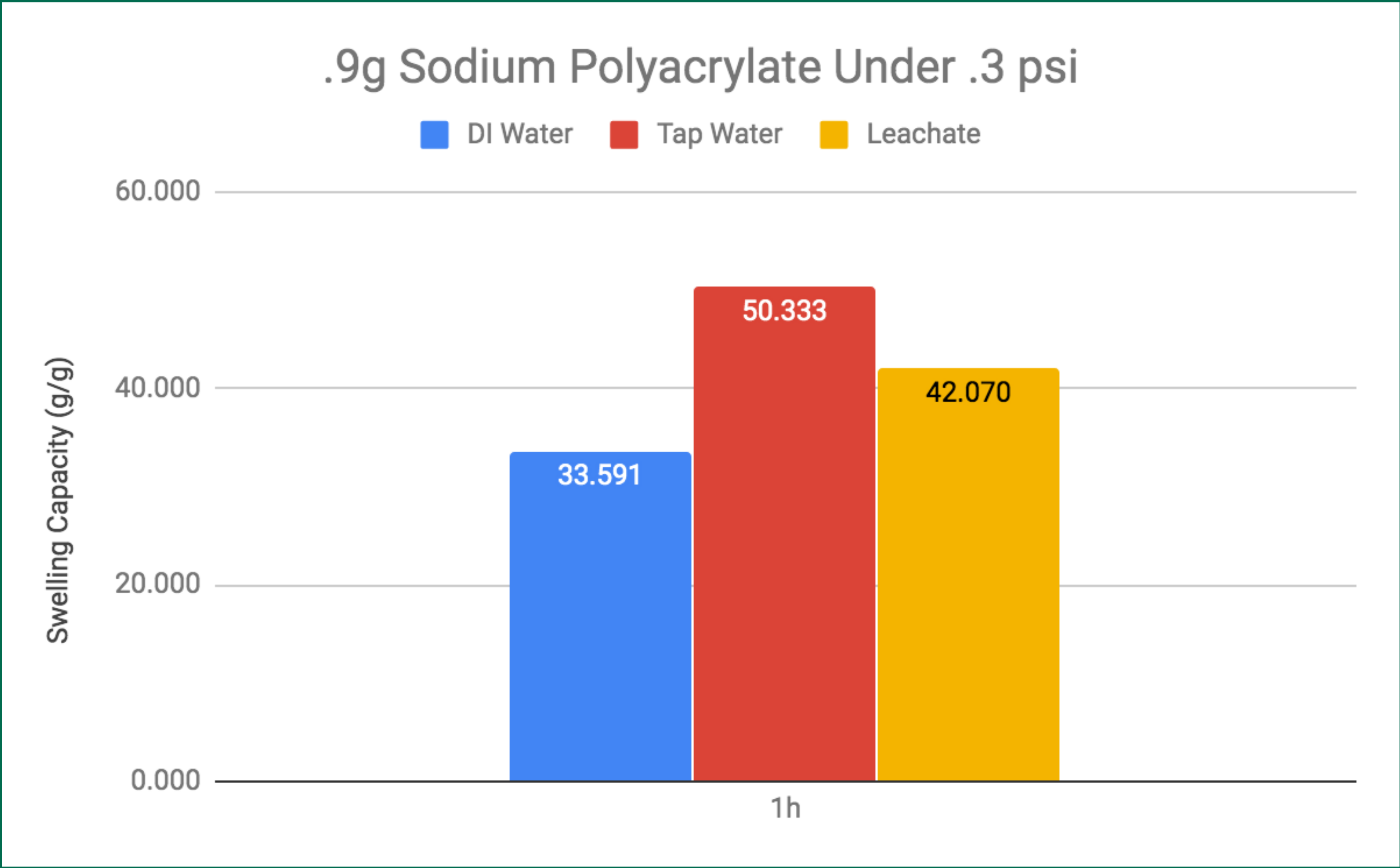
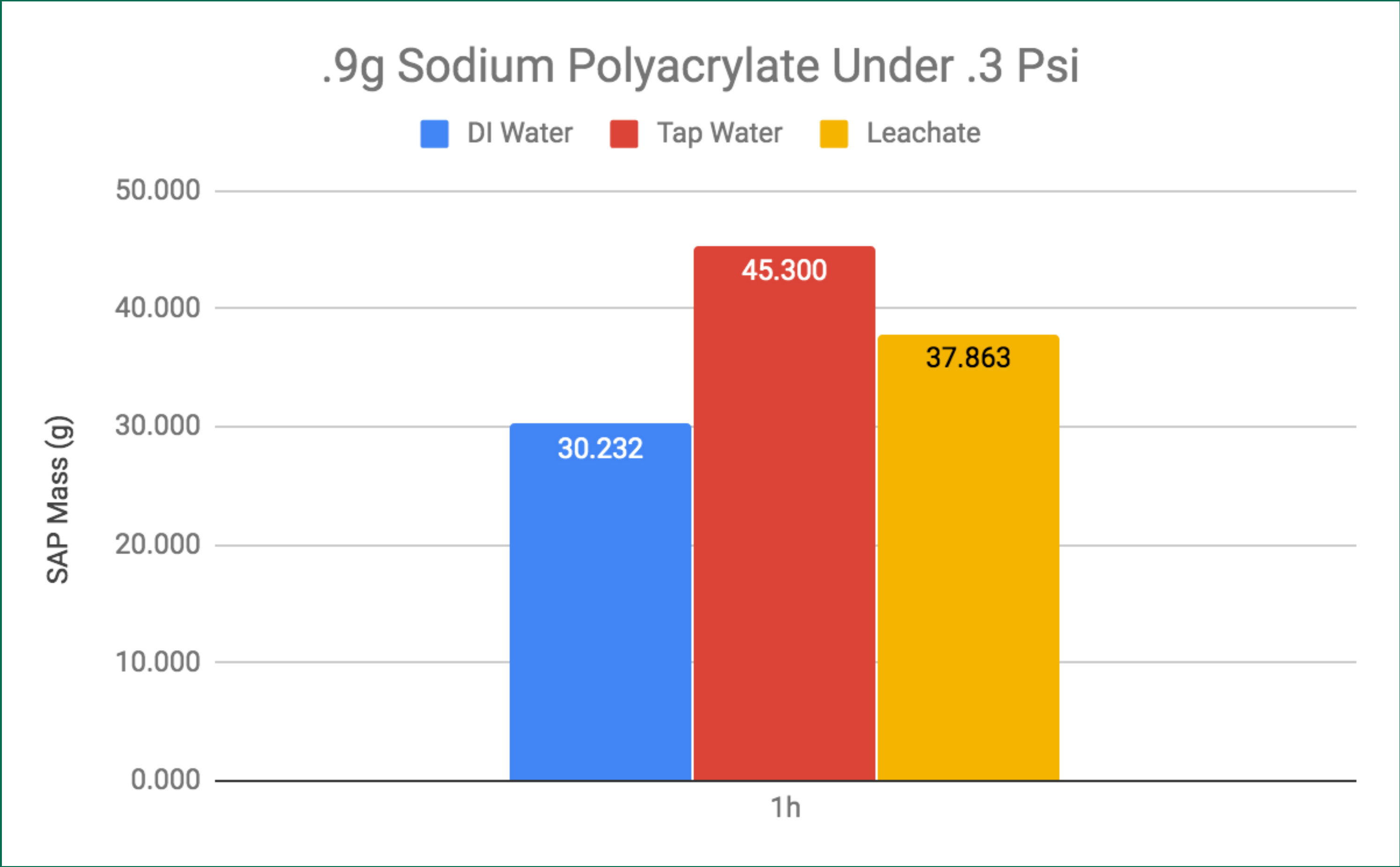
## RESULTS

- The mass retained and swelling capacity of each SAP decreased with decreased water purity in the teabag, sieve, and vacuum methods. This is exhibited by the data from the teabag method method is shown below:

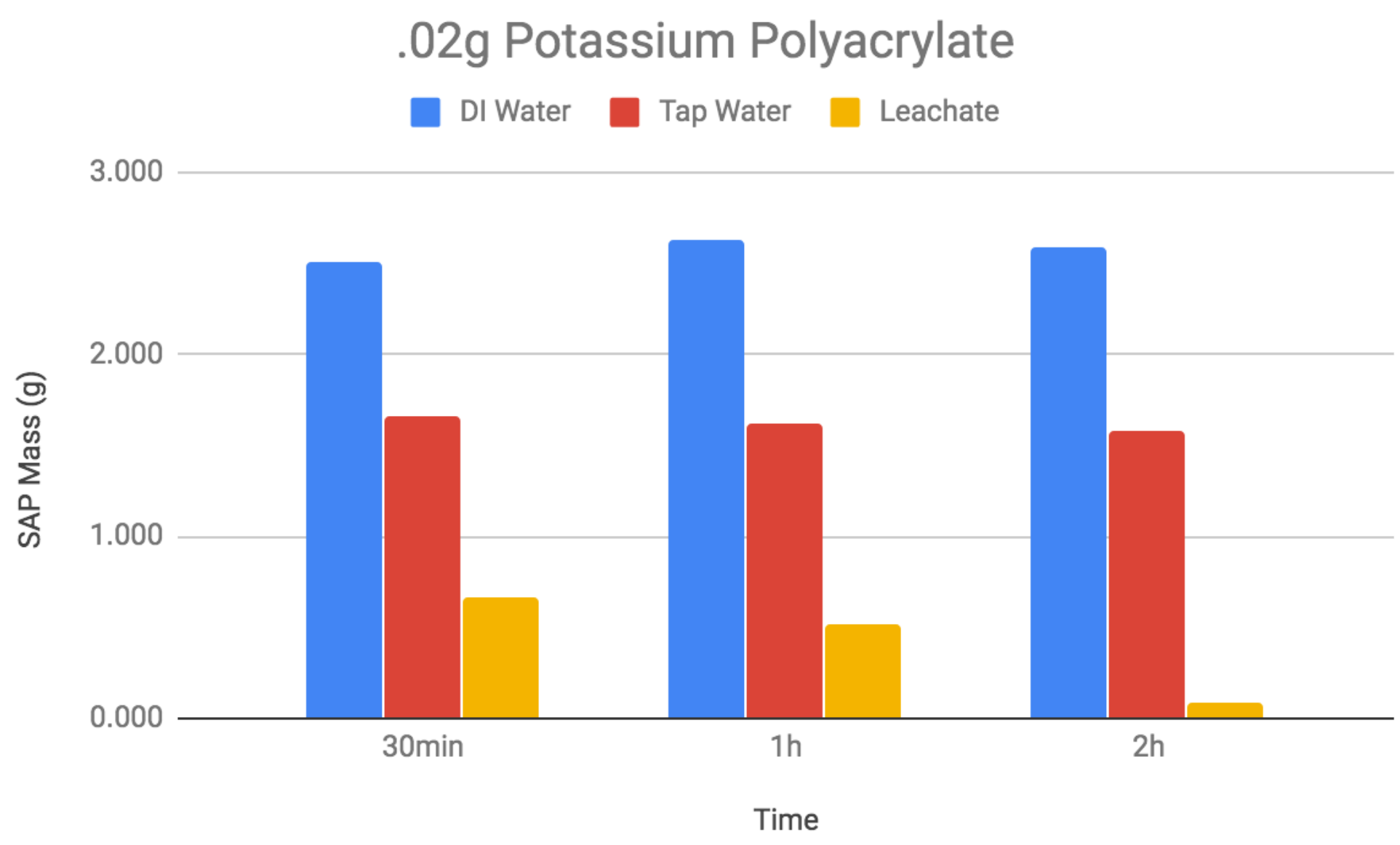


- The AUL method, which mimicked the pressure within a landfill, was the only method that showed increased mass and swelling capacity for certain polymers in leachate

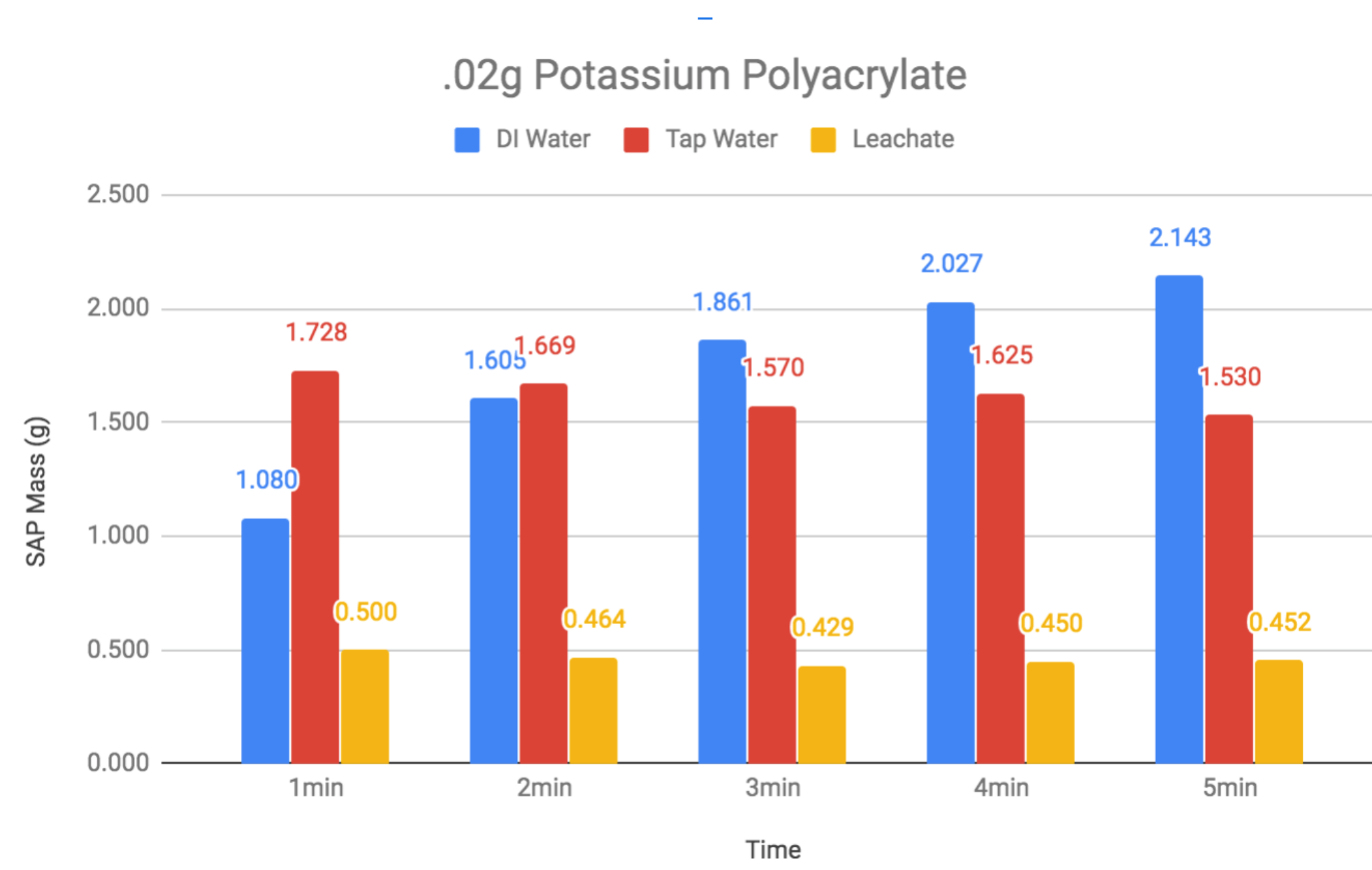
When pressure was applied to the leachate absorbing SAPs, its swelling capacity and mass after one hour was close to or greater than that of the DI water absorbing SAPs.



## Sieve Method



## Vacuum Method



## AUL Method

