FIELD NOTES

October 9, 2019

Recharge and Heat

To bring two woodchip bioreactors installed on the University of Illinois at Urbana research fields in 2014 in line with two woodchip bioreactors installed in 2018, Drs. Laura Christianson and Richard Cooke and their teams recharged the two older woodchip reactors in early October. "Typically, woodchip bioreactors have a life of approximately 10 years, but we needed to have four total reactors close to the same age," Dr. Christianson said. The researchers are trying to learn whether they can heat the drainage water going through the bioreactors enough to speed up the microbial process and thus increase the nitrate removal.

One of the woodchip bioreactors built in 2018 was installed with heat pads *and* insulation; the other with *no* heat pads, but with insulation. The recharged 2019 bioreactors currently have no heat and no insulation. The amount of nitrates removed will be compared among the four. "We are doing this as a 'proof of concept' experiment to see if we can actually heat the quickly flowing water enough to see that heating makes a difference," Christianson added. Drainage water in the spring is typically cold.

The recharged woodchip bioreactor used the same type of woodchips as the earlier ones. When they removed the old chips five years after the initial installation, the woodchips were thoroughly mixed with the soil, with a few scattered whole wood pieces. A new liner was also installed and then the plumbing re-attached. Power for the heating pads is being supplied by a solar panel.

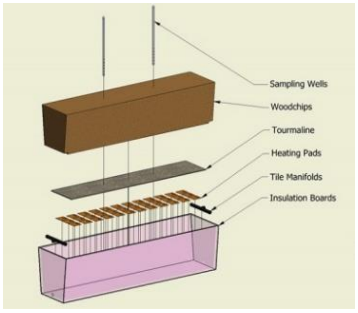

Diagram of how the 6" x 6" heating pads fit within the woodchip bioreactor.

One of the two 2014 woodchip bioreactors is being cleaned out to make room for all new woodchips.

One of two woodchip bioreactors after being "recharged" with new woodchips.