

FILE: SHMD REPORT 250701

TO: Smoky Hill Metro Board

FROM: Rick Shecter

DATE: July 1, 2025

SUBJECT: Deere Tractor Water Tank and Sprayer Efficiency

LOCATION: Three new Trees on South Telluride Street and Progress Drive

**BACKGROUND:** I met with John Bofenkamp to observe the effectiveness of the water tank and sprayer on the Deere tractor in watering the 3 new trees on Telluride. I wanted to observe the flow rate of the sprayer, how long it took to cover the area of the root zone, and the infiltration rate. Please see the enclosed pictures and observations.

**OBSERVATIONS:** The 150-gallon water tank is well-sized for watering trees since it takes about 5 gallons to water each tree, making it capable of easily watering 25 trees in one trip. The flow rate through the sprayer matches the amount required to soak and saturate the root zone. Any greater flow rate would not only wash away the topsoil covering the root ball but also exceed the capacity of the soil to absorb the water.

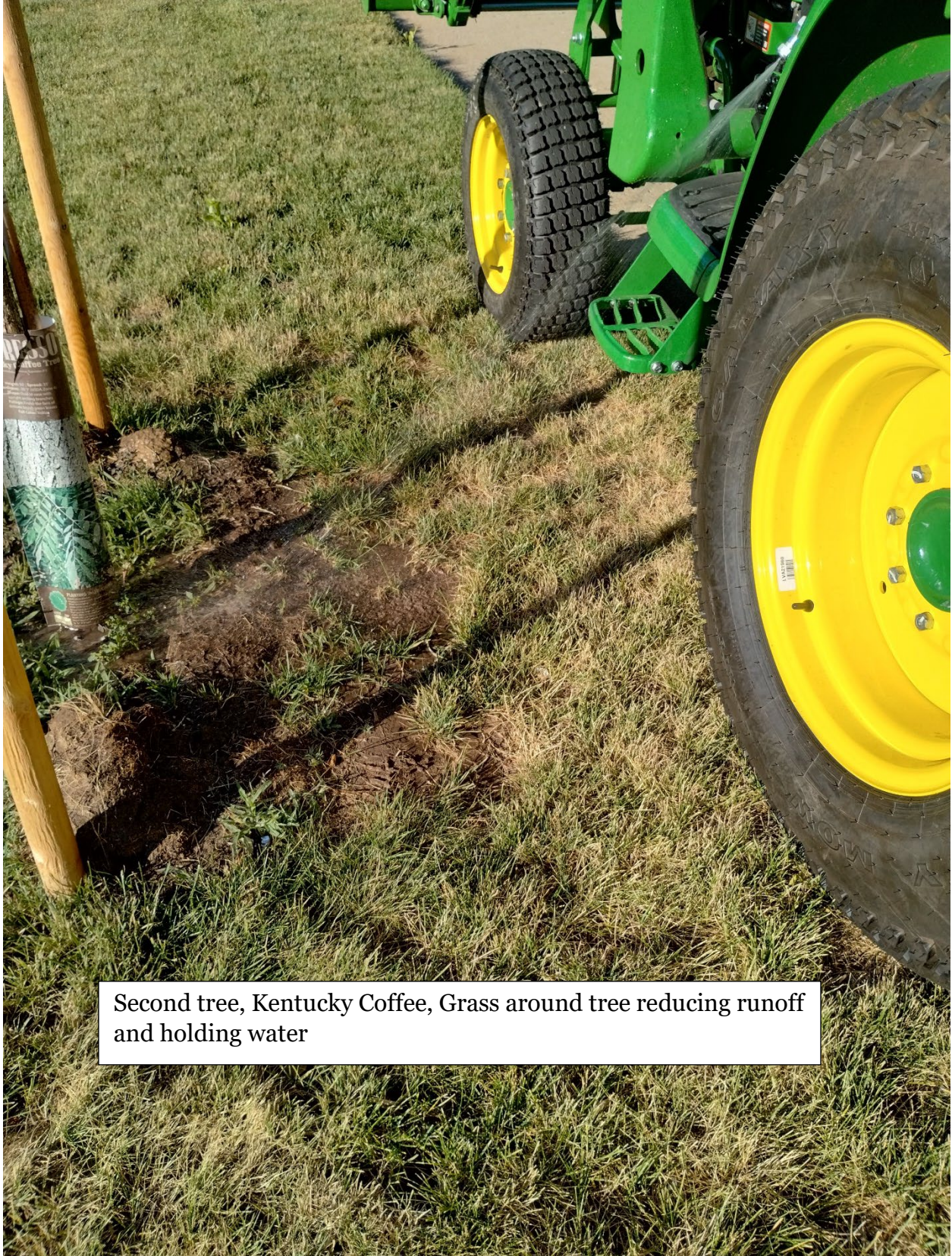
In addition to using the water tank to water the trees, I am also working on adding water soluble nutrients to the tank before the tree or grass is watered. This could also be used in special situations. As a result, we would not only provide water to the trees but also have that same water containing ingredients that would promote soil biology health as well as a surfactant to increase the infiltration rate and reduce water lost through evaporation.

**TRANSPIRATION:** Trees “sweat” just like humans do to stay cool by a process call transpiration in plants that generally occurs at night. They release moisture through their leaves in a process called transpiration where the evaporated water pulls heat from the tree leaf surface. Research has shown that when trees have cool soils, they transpire less water and therefore can survive in drought-like conditions.

Finally, I will research adding a choice of ground cover grass or plants around the tree trunks to cool the soil and prevent runoff from the water spray. The cooler the soil is, the less water the trees will need to stay cool.



First Tree, Linden, slowly spraying to prevent runoff and lost topsoil



Second tree, Kentucky Coffee, Grass around tree reducing runoff and holding water



Third tree, Linden, showing slow water infiltration