Biochar for Enhanced Bioretention Credit Review – Sara Esposito

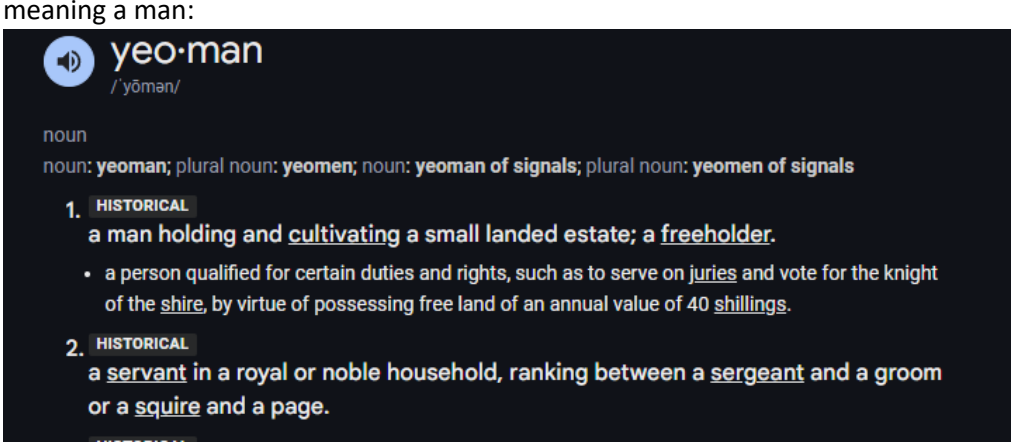
1. Page 5 – I would bullet the last sentence in "Method of Incorporation" and change to:
   - Storage and Handling: The storage and handling guidelines apply to all projects (Appendix D.2 and D.3)

   I would also remove the first bullet under "On-Site" which references storage and handling.

2. Page 6 – Pesticide adsorption – may want to include somewhere that pesticide is a broad term that also includes herbicides, fungicides and fertilizers
3. Page 6 - Last sentence of pesticide adsorption "this is not a concern for bioretention, as pesticides should not be applied to them". Seems like a broad, opinion based sentence. If invasives were coming into a bioretention, my maintenance staff would likely apply herbicides to control them as they do in other stormwater facilities. I'm not aware of regulations for bioretention limiting their use.
4. Page 7 – Dust emissions – add reference Appendix D.2 and D.3 for Storage and Handling?
5. Page 8 – "biochar improved runoff reduction by 2%-89%". That's a big range. Some explanation of why that large of a range, and the low results are because of a particular reason? The subsequent bullets help to explain but don't really get into the specific reason of each of why one scenario was only 2% and another was 89%. The appendix elaborates but I think just a sentence or two here furthering explaining would be good.
6. Example 1: Lines should be added to the 3 charts to show how the values were derived.
7. Example 2: The 3 charts should be added with lines similar to example 1.
8. Page 13: Super minor but a parenthesis missing at the end of the Bowser reference.
9. Page 21: Seq. of Const. #3 – sentence is confusing and should be restructured. Similar to comment #11 below should better consideration of compaction for the in-situ work be taken? Should a max weight of equipment be given? Should different requirements be given for with or without an underdrain? (two trains of thought… one, protecting the underdrain from cracking; two, without an underdrain, bioretention is even more in jeopardy of failing if substructure is compacted too much.) In truth the in-situ application makes me nervous. To me the media should be excavated from the side, media changed out or biochar incorporated outside of the bioretention, and then the media returned to the facility, so that way heavy machinery is not within the facility footprint. But maybe I'm over paranoid about compaction!

   See next page for more comments…

10. Phase 21: 4a – I googled “yeoman” because I had never heard of it… It’s a noun not a verb meaning a man:



I don’t think its an appropriate or needed term. Just put Subsoil.

11. Page 22. 5f Suggestions on how not to “compact the soil” if they are supposed to use a subsoiler in 5e?? Should a max weight for equipment be given?
12. Page 22 4g and 5h… Seed/straw/tackify would be areas outside of the bioretention right? For the actual bioretention it should be mulched and planted? No mention of plantings in either section.