

Interactive comment on “Filter properties of seam material from paved urban soils” by T. Nehls et al.

Anonymous Referee #1

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Review of the manuscript “Filter properties of seam material from paved urban soils“ by Nehls et al. submitted to the Hydrology and Earth System Sciences

The knowledge of nutrient and pollutant fluxes in urban ecosystem is still limited and currently a major focus of environmental science. The importance is obvious given the increasing urbanization and related environmental problems. The paper by Nehls et al. is an important contribution to increasing our understanding of the contaminant cycles in urban environments. Overall, I think that the work has been properly conducted and the results well interpreted. Nevertheless, the manuscript can still be improved. This concerns mainly many unclear statements, stylistic problems, and redundancies. Future submissions should clearly be more thoroughly edited.

The Abstract is lacking a rationale. p. 2626, l. 5: Perhaps, this humus form is unique, perhaps not. It might be “particular”? p. 2626, l. 6: “filter” for what? p. 2626, l. 15:

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“compared to natural soils” is clearly too general as there are many different natural soils of which some might even have similar properties as the seam material. p. 2626, l. 17: Perhaps “ponded rain water” is clearer than “ponds”. p. 2626, l. 22: Figure 1 can be omitted. It is unrelated to the objectives of this work. p. 2627, l. 4: What is meant by “amount” - “coverage”? Generally, “amount” is ill-defined. p. 2627, l. 15-17: This would read better “The high infiltration rates might result in high contaminant fluxes even if dissolved contaminant concentrations are low.” p. 2627, l. 18-19: Delete “according materials which are”. p. 2627, l. 22: What is a “very dark” color? Is this a Munsell category? p. 2628, l. 14-17: This can be shortened to a single sentence. p. 2628, footnote: Papers in preparation should not be cited (see also at other parts of the text). p. 2629, l. 6-7: “under suspicious observation of pedestrians” must be proven or deleted. p. 2630, l. 2-3: Delete. p. 2631, l. 9: “cmol(+)” is not SI and should be replaced by “mmolc” throughout the manuscript. p. 2631, l. 16: θ_{τ} is not explained. p. 2632, l. 3: Is this equation correct? I miss a Σ p. 2632, l. 4: “f(Ei) vs. Ei”. p. 2632, l. 15: Which “values”? p. 2632, l. 16: Replace “for” by “by”. p. 2632, l. 21: No results of Ni, Cu, and Zn are reported. Therefore, these elements do not need to be mentioned. p. 2633, l. 2: Replace “according” by “corresponding”. p. 2633, l. 6-7: Move whole sentence to after “under pressure”. p. 2633, l. 9: CV of what? Replicate measurements with the AAS? Do not need to be mentioned. p. 2635, l. 1: “seam surface area”? p. 2635, l. 12: Figure 4 is nice but not necessary. p. 2635, l. 15: “dissolved” instead of “liquid”. p. 2635, l. 18: What is meant by “runoff” - the infiltrating water? p. 2635, l. 20: This sentence is unclear. p. 2635, l. 26: Which salts? Most salts including NaCl do not have a pH effect. p. 2636, l. 1: “supply” instead of “intake”? p. 2636, l. 4: This is unclear. Is the ionic strength meant by “salt effects”. Increasing ionic strength usually mobilizes protons and therefore results in lower not in higher pH (cf. pH in water > pH in 1 M KCl). p. 2637, l. 5: What is a common soil? Like a common plant or a common animal? This is by far too general. p. 2636, l. 8-9: This is an unrelated statement that should be removed. p. 2636, l. 14-15: Unclear. You could simply state that some vertical movement of organic C is to be expected. p. 2637, l. 5 and l. 15: Why are there

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different CEC values? This is confusing. p. 2637, l. 8: Why should organic matter of an acidic sandy forest soil have a high CEC? You must make clear that this is the artificial potential CEC value because in acid soils this CEC is reduced because of the loss of variable charge. p. 2637, l. 19: What is “spheriodal”? Even if it’s just a typing error, what is the “spheroidal particular character of Corg”? p. 2637, l. 21: Skip “very”. p. 2638, l. 1: “Ereport a SCD ofE” p. 2638, l. 4: As the polarity of the organic matter has not been directly determined, something as “likely” or “suggest” should be included. p. 2638, l. 5: Skip “investigated”. p. 2638, l. 14: The variable for mean adsorption energy is not identical with that introduced on p. 2632 (the cross above the E is lacking). p. 2638, l. 14: What is meant by “shadowed by the salt accumulation effects”. The whole salt effects remain somewhat obscure. This needs to be better explained. p. 2638, l. 15: “found to be” can be omitted. p. 2638, l. 20-24: Delete. There is a wealth of possible methods and no need to mention an arbitrary selection (perhaps meant as announcement?). p. 2638, l. 25-26: This statement is unclear. Perhaps it can just be deleted. p. 2639, l. 3: The range of Cd retardation factors are inconsistent in text and Table 3. p. 2639, l. 4: What is the “described case”? p. 2639, l. 5-6: Positive effect on what? p. 2639, l. 14-15: This statement is unclear. p. 2639, l. 16: If there is no correlation, a regression equation does not make sense. p. 2639, l. 17-19: Senseless results do not need to be reported. Delete. p. 2639, l. 26: Write more directly “different EDTA-extractable and total Pb concentrations”. p. 2640, l. 1: Replace “very well” by “closely”. p. 2640, l. 6-14: What’s about Mn and Fe oxide concentrations? Are these the suspected sorbents explaining Cd retention? p. 2640, l. 11: Where is the contrast, justifying the use of “however”? p. 2640, l. 14-15: Replace “towards” by “of”. p. 2640, l. 15: Delete “very”. p. 2640, l. 17: Mention that soils A1-3 are from the Kocher study. p. 2640, l. 19: Where are the clay concentrations shown? p. 2640, l. 20: Skip one of the “are”. p. 2640, l. 21 and l. 24: Delete the “very”. Perhaps search for “very” in the whole text and delete them allE p. 2641, l. 4: What’s the “liquid phase”. Do you mean the soil solution after equilibration with deionized water? p. 2641, l. 5: Replace “runoff” by “infiltration”, because this has a lateral connotation. p. 2641, l. 7: Delete

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the “!”. p. 2641, l. 10-12: Explain. Sounds like a comparison of apples and pears. p. 2641, l. 12: Replace “example” by “exception”. p. 2641, l. 14: Can a time be high? p. 2641, l. 18: Replace “leads not” by “does not lead”. p. 2641, l. 23: This is a repetition. p. 2641, l. 26: “ponds” sounds like fish production - perhaps “ponded rain water” is better. p. 2642, l. 7: Why glyphosate is mentioned and not any other organic compound? p. 2642, l. 21: Replace “runoff”. p. 2642, l. 22: I do not think that it is reasonable to generally state that dust deposition has a positive effect. Most pollutants only enter the soil because of this deposition and part of them are retained. Without dust deposition there might be much less pollution. p. 2646, Table 1: Explain all variables. p. 2647, Table 2: Too many valid figures. This produces the impression of an accuracy that is not reached. p. 2648, Table 3: Explain all abbreviations. p. 2650, Table 5: Move the footnote to the lower end of the table. p. 2651, Figure 1: Delete. p. 2653, Figure 3: Not mentioned in the text (or I missed it). p. 2654, Figure 4: Delete. p. 2655, Figure 5: Replace figure legend by “Relationship between organic C and potential cation-exchange capacity in seam materials” The regression equation has too many valid figures. p. 2656, Figure 6: The regression equation has too many valid figures.

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