


# EXHIBIT 28

## bill floyd

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**From:** Rodger L Nelson <rln@frontiernet.net>  
**Sent:** Tuesday, August 21, 2018 12:46 AM  
**To:** 'Bill Floyd'  
**Cc:** Rodger L Nelson; rod.gern01@gmail.com  
**Subject:** RE: Chattooga River Headwaters in NC  
**Attachments:** PIC00028.JPG

Bill – A few comments:

1. The Payette has measured embeddedness since 1984, so we've done it for more than 30 years.
2. I didn't mean to imply that granite doesn't break down further than 6.3mm, it does; I meant that I thought we selected it because fish biologists thought that was approximately the size below which particles embedded the gravel-cobble matrix and I thought I recalled that there was a geological reason in granitics for using that rather than, say 4.25mm. I think most biologists believe that 4.25mm and smaller are the real problem, and (if I recall correctly) some even think that 6.3mm particles might protect against the intrusion of smaller particles. Anyway, I believe there is some geological/geomorphic reason for interest in that size class, but I cannot say for sure what that is. Our soils are often described as "coarse sand" and we used to call the 6.3mm sediment "coarse fines." [Users Guide to Fish Habitat Descriptions that Represent Natural Conditions in Salmon River Basin](#)
3. I'm reluctant to make any "expert" statements on your system because I don't know it well enough. I suspect the Forest Service doesn't have enough information to determine what the "natural" condition was unless they have surveys and/or photos stored in their archives (we at least had this: [https://www.fs.fed.us/rm/pubs\\_int/int\\_gtr322.pdf](https://www.fs.fed.us/rm/pubs_int/int_gtr322.pdf)).  The photos I've seen suggest that the stream is pretty sandy, but sand can be a natural component. However, it does seem reasonable to me that trampling the banks to launch rafts and "seal launching" could make exposed soil conduits that could channel fine sediment into the river. Where we needed to protect ESA listed fish, I don't think we even allowed hand firelines to be tied directly to streams. We were also working on identifying and possibly mitigating user-created trails to the SFSR for fishing access because we considered them sediment conduits (photo attached). downloaded from
4. We also prohibited rafting during certain times of the year to protect anadromous fish in particular. Boats dragging through gravels can disrupt redds and rafting can disturb spawning fish.
5. We typically also prohibited igniting prescribed fires in riparian zones. We would allow them to "back in," but we regarded destabilizing the soils by burning to be an unacceptable risk with respect to the potential to increase sediment delivery to streams with ESA listed fishes. It does seem like your protections for ORW would be expected to be comparable.
6. It seems to me that the most recent data report suggests there is poor spawning success if young of the year fish are a small proportion of the population collected during population surveys. Again, I don't know what the population sizes would be without the disturbances, I don't recall collecting fewer young of the year than adults when I was doing them.
7. I would like to know how much large woody debris (LWD) there is in the river and whether any has been removed to promote rafting. Again, I am not familiar enough with your system to know how much wood there should be, but I have seen studies linking LWD to trout densities in the Southeastern US. It is very important out here and we seldom allowed debris jams to be removed.
8. It seems unreasonable to me that a habitat score that is near or less than 60 for half the sampled sites could be considered "outstanding" in any way. If fish habitat was formerly outstanding, it doesn't seem to be according to that 2016 report.
9. I think at a minimum your Forest should do these things:
  - (a) A good literature survey of fish and habitat studies from similar areas should be done to compare existing conditions with those reported in other studies. I looked a little and didn't find many online that I was sure were comparable, but local biologists should know what studies are available or what data have been collected by various parties and how to obtain the information. Much information can often be found in files that never see publication.

- (b) Annual sampling of trout populations should be done accurately characterize the population dynamics.
- (c) Some sort of scientifically recognized sediment sampling should be performed. Core sampling is the most accurate and repeatable, but the interstitial measures are useful. The Payette's free matrix technique has the advantage of being reach-level sampling (i.e., it is not constrained by depth and flow criteria), but targeted sampling/monitoring in certain specific habitats (e.g., spawning gravels) may be useful. The Platts technique for embeddedness could be used (or the one you put in your report of the EPA categories). For that, I think I'd randomly select transects from a map using GPS to locate them on the ground and probably do at least 30 per reach. I don't think that would be as reliable as every 10 feet like Platts did but it might be enough in a 600 foot reach.
- (d) A LWD inventory should be performed.
- (e) I would want the habitat measures done in other streams, similar if possible, with more and less disturbance probably, to work out where you fit on some scale of disturbance from unimpaired to impaired.

After thinking about this for a while, I think that this is about the best I can do. While I have done a lot of sediment monitoring, methodology development, and analysis, my field experience has been pretty narrow; that is, all Rocky Mountains or Great Basin. I do think it looks like you have sediment issues in your river and I have seen Forest Service managers drag their feet when faced with a need to correct problem situations; I've seen this be especially true when favored recreational interests were involved. But I think you have established your case well and your draft complaint is well written and to the point (though I did find an occasional typo). I hope you succeed in getting the agency to at least address the issues, and preferably to implement some sort of mitigation when better surveys clarify the problems.



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**From:** Bill Floyd <wcbfloyd@ix.netcom.com>  
**Sent:** Sunday, August 19, 2018 10:52 AM  
**To:** 'Rodger L Nelson' <rln@frontiernet.net>  
**Cc:** Bill Floyd <wcbfloyd@ix.netcom.com>  
**Subject:** RE: Chattooga River Headwaters in NC

Roger, you really can't appreciate how much of a help you have been—along with Dr. Kaufman at Corvallis Oregon EPA.

The science that you developed in the past on the Payette, etc. has already helped me to understand how the USFS is cherry picking and purposely disregarding what it already knows about the impacts of excessive embedded sediments on trout—or at least what I believe they know.

I think you told me that 30% embeddedness was the threshold you worked with in determining when salmonid habitat would be disrupted for satisfying the reproductive and early life cycle needs of the salmonids.