Agenda
South River Science Team
June 15, 2004

DEQ Office
Harrisonburg, VA

9:00	Welcome, Introductions	Don Kain
9:15	Crop Study Update	Dean Cocking / Bill Berti
9:45	Air particulate Survey Findings	Dean Cocking
10:00	Recent Lumex / Guzzler work	Dick Jensen / Ralph Turner
10:30	Communications: – Newsletter – Sign Postings	 Mike Liberati Don Kain / Paul Bugas / VDH
10:45	Trout Sampling 2005	Don / Paul
11:00	Shake & Bake	Rob Mason / Erin Mack
12:00	Lunch	
1:00	Modeling Proposal from Hydroqua	Nancy Grosso
1:30	Hydrogeology Proposal	Jim Pizzuto (by phone)
2:00	SETAC meeting	Ralph
2:15	Other topics, updates, etc.	All
2:45	Summary Discussions – Hypotheses, etc. – Next meeting	 Ralph / Don
3:00	Adjourn	

For those calling in -Toll free: 866 249-5325, participant code 230874

South River Science Team Bimonthly Meeting Summary: 15 June, 2004

Welcome and introductions by Don Kain.

- See Attachment 1, page 7 for a list of the meeting's attendees

Crop Studies Update. Dean Cocking/Bill Berti

- Ongoing study to determine if Hg is taken up in plants enough to have effects on human health (refer to Presentations folder)
- found from Nov. 2003 that [Hg soil] is highly variable (from 4-67 ppm) in a relatively small area at Crimora Forestry Station.
- For 2004, used Complete Block Design (ea. block small enough to represent a single [Hg]; high, moderate, or low
- Tests confirm control site at background levels (<0.1ppm)
- For 2004, moved control site, used 2 replicates (better control).
- Earlier planting this year should facilitate measurements
- Plan to use 2003 and '04 data for poster at SETAC
- May want to test graze/forage crops (test unwashed, since cows don't usually clean their feed)
- Dean doesn't think there's any significant uptake in forage crops
- Plan to test soil again at end of growing season
- suggestion made to sample existing forage crops along the river floodplain, but decision made to grow our own, for better control
- Bill Berti- thinks need one more year of data before addressing new plant issues (like the forage question)
- Robert Brent asked about apparent non-random dist. of Hg in soil; wondered if it may be due to eddies in flood flows, caused by obstructions, etc.; panel suggested it's more likely to represent soil management (and movement) procedures at the Forestry Center

Air Particulate Survey Findings. Dean Cocking

Note – this project is one that Dean began pursuing prior to his involvement with South River Science Team projects. He has continued the project independently and volunteered to share his findings to date with the Science Team.

- Project measured deposition of Hg onto "tangle-foot" (sticky) surface petri dishes; measures Hg from any source (air, bugs, dust, rain, etc.); refer to Presentations folder
- Results show varying amounts of Hg on plates, concentrations around South River mostly predictable, but some sites w/ high concentrations difficult to explain (upstream of DuPont, some Harrisonburg sites)
- Dean thinks some sites may be hot due to past apple orchard use of Hg used in orchard management

- Dean noticed that some leaves had high [Hg]
- Rob Mason pointed out that leaves can uptake volatile Hg outgassing from soil, so leaf Hg may not reflect atmospheric sources
- Fair number of plates lost (vandalism?) during study
- Some patterns observed from the study may reflect soil transport from floodplains used for gardening/landscaping
- Followed up study in 2003, found some high spots; Rob Mason observed that highest concentrations observed in study were about equal to average wet deposition values (in US?)
- Cost to place dish, then analyze is about $1.50/ea., therefore nice for student projects
- Rob suggested in any future studies to collect and analyze soil beneath plates, to determine if they are a source of Hg
- DuPont uses coal; could this be a source of some of the Hg that Dean is finding?
- Dean pointed out that this approach may be a useful screening tool
- Billy suggested using more replicates in future studies
- Ralph Turner suggested using a "moss bag" method to collect Hg present as a vapor (some researchers have used carbon or sulfide pellets)
- PIMS were originally designed for atmospheric testing (but these are expensive by comparison to petri dishes. PIMS do provide replication, however)
- Ralph T. said that if you want to look for anomalies, collect leaves from a given species of plant and analyze, since they take up Hg.
- At this point, Dean hasn't decided whether the approach merits further study

Recent Lumex/Guzzler Work. Ralph Turner/Dick Jensen

- Weren't able to do much Lumex work (the instrument was "finicky")
- Guzzler- used hand bilge pump to pump fine sediment through a ~180µm filter to remove any sediment particles larger than fine sand
- Allowed sediment in water to settle in a 5 gal. bucket for about ½ hr., decant, then collect settled sediment in a small HDPE bottle for analysis
- Used a drive-point to collect pore-water from about 6" below stream bed surface; results didn't indicate Hg levels unusually high in area around plant (i.e., didn't appear to represent a sub-surface mercury pool)
- Water sample near bricked outfall wasn't too high (12.54 ng/L)
- Sewage treatment plant outfall downstream of 2nd St. bridge was about 25 ppt; no smoking gun there either)
- Found 0.8 ng/L MeHg in oxbow/wetland area upstream of Basic Park ; high, but not as high as some Crimora values in the past
- Dick J. noted that the highest dissolved values observed during this expedition were 6 ng/L, and that they occurred in the same area upstream of Dooms dam where *Corbicula* values have been observed to increase
- Ralph T. thinks that although we haven't found a "source" near the plant yet, that it's too early to stop investigating that area, perhaps do a study there over a period of several days

- Nancy G. observed that pore water values look about the same [Hg] as surface water, wonders if water might be "short-circuiting", and that there may still be Hg deeper; Ralph pointed out that there really isn't very much sediment
- No sediment results from guzzler yet, but Ralph thinks they won't be very high, since the drive-point results were relatively low
- DEQ is planning on using the guzzler method for the next regularly scheduled 10 sediment sample as per the SWCB agreement long term monitoring plan
- Using the guzzler should eliminate variation in results caused by analyzing sediments w/ vastly different particle size distributions
- Nancy asked if we'd found enough fine grained particles to perform analysis; answer was "yes, plenty"
- Ralph thinks this approach is most useful for sediment, since it collects the finest particles and flock that he suspects is most biologically active/available
- See Presentations folder for more details

Communications. Mike Liberati, Don Kain, Paul Bugas, VDH

- Mike L. suggested that we put old issues of the SRST newsletter onto future "Meetings Minutes" CDs.
- Sign Postings- intend to post Spanish/English signs once SRST panel achieves concensus on message
- Agreed not to post private property
- May pursue brochure for fishing/guiding/floating businesses, but these may be reluctant to advertise subject that could reduce business

Trout Sampling 2005. Don Kain, Paul Bugas

- Propose that fresh fish are sampled as control
- May try to tag fish to ID potential carry overs (in case some fish are managing to stay in river for more than a year)
- Recent proposals are to release more water from Baker Spring to the South River to improve trout habitat. Could this result in more carry-overs and for multiple seasons, and therefore lead to trout w/ >0.5 ppm Hg?
- May want to sample Bridgewater suckers; might be able to get some canned samples?

Shake and Bake. Rob Mason

- All sediment in experiment had relatively low percentages of MeHg
- Weren't any really high concentrations of MeHg
- Rob wants to re-run experiment, since he had some issues w/ QA results of last run
- Tentative conclusions so far is that resuspending sediment doesn't seem to increase methylation rates in sediment
- Did observe that for Dooms sediment that a greater percentage of MeHg must have been on fine particles, since TSS [Hg] was higher than sediment concentrations
- For Dooms sediment, did see some small increase in methylation

- Ralph T. observed that GS-01 and GS-02 are pretty high in Hg for upstream controls; this may be a result of lots of organic matter in that sediment
- Refer to Presentations folder

Floodplain Update. Annette Guiseppe-Ellie, Dick Jensen

- Sampling was much tougher than expected; lots of cobbles in the way, forced slight change in sampling methodology (dig one large hole, then collect samples from the inside perimeter)
- Sampling for all sites complete except for Hopeman and Allied sites; too overgrown (w/ poison ivy) to sample; will go back late in fall to collect samples
- Expect to get results of sites that were sampled this summer in about 1 month; Δ should have results for next meeting in Aug.
- See Presentations folder

SETAC Update. Ralph Stahl

- Planning on several posters and/or presentations: Greg Murphy, Ralph S., Rob Mason
- Kathy Adams has 1st draft of a brochure ready, ~3-4 pgs, should be ready for review at August meeting

Hydrogeology Proposal. Jim Pizzuto

- Plans on project spanning 2 years, beginning fall 2004 or January 2005.
- will model river and floodplain from Waynesboro @ DuPont, to Port Republic
- Includes funding for Jim, Ph.D., and master's/field tech.
- 1st year would involve primarily literature research, mapping, trying to get temporal perspective
- Evaluate bank erosion over 1st and 2nd years, partly through monitoring
- Look at accumulation over tree roots to measure longer term sedimentation, marker horizons (event based; floods)**,** perhaps radionucleotides
- Want to try and quantify bed load/storage of fine grained sediments
- Will use feedback from developing models to modify field operations
- Mike S. asked if Jim intends to quantify sediment input from upstream; Jim said it'd be valuable, but he's not equipped to do it; hopes that perhaps USGS or someone else might investigate that
- Refer to Presentations folder

Hydroqual Proposal. Nancy Grosso

- Propose to model sediment and contaminant transport through the river (refer to Presentations folder)
- Hydroqual are numerical modeling specialists
- Use models they generate to refine the conceptual system model

- Hydroqual proposes to evaluate historical data, then recommend where data gaps exist, then organize and fill gaps.
- Another goal would be to delineate pathways and speciation/cycling w/in the system
- This would also assist in and work with TMDL development
- From a historical perspective, they'd check assumptions originally made by LMS w/ respect to predicted recovery rates of fish tissue Hg concentrations
- Rob Mason pointed out during the meeting that he's been asked to sit as an expert on Hg for Hydroqual (so he might end up working on project through them, as well as independently)
- One goal would also be to try to figure the amount of Hg necessary to maintain the elevated fish Hg
- Proposed upgrades to the project are to provide for Hydroqual staff to regularly attend SRST meetings; to have a two day technical meeting to have SRST members and Hydroqual staff discuss information and current hypothesis in depth
- Dick suggested that Hydroqual pace their work to Jim Pizzuto, so the two can provide data required by each other
- Nancy suggested organizing the data base prior to Hydroqual getting started
- Mike S. suggested that Hydroqual **not** wait on Jim, since Phase I is more a research and data gap identification**,** but he does think that Phase II should wait for Jim.
- Rob Mason pointed out that it's **very** difficult to model for MeHg; and it would require a lot variables, as well as a level of understanding that we don't currently have

Other Topics:

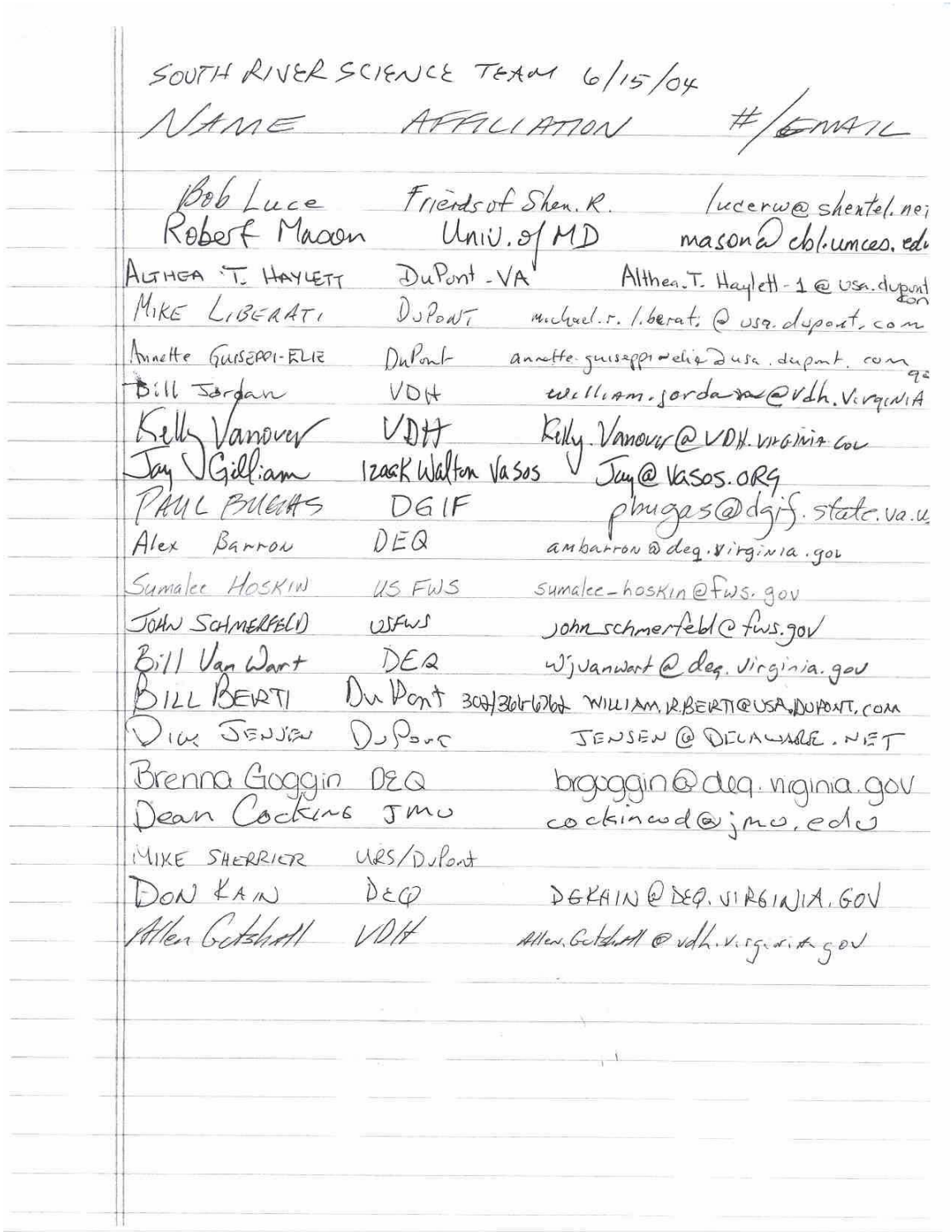
- Don remarked that Doug and Tom's clam proposals are upcoming
- Mike Sherrier reported that the stormwater study is proceeding (hopefully some data by next August's meeting)
- Fish and Wildlife's John Schmerfeld thinks they may have a fair amount of info regarding the importance of up- and outwelling.

Tentative Schedule for Next Meeting:

- Clam Proposal
- Stormwater data
- Soil Floodplain data
- Is Karst present on DuPont property?
- Guzzler sediment results
- Additional Shake and Bake
- Crop Study results (in part)
- Maybe NRDC agreement?

Next Meeting Scheduled for 10 August 2004

Attachment 1. List of Attendees



SOUTH RIVER SCIENCE TEAM 6/15/04

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