

## South River Science Team

May 14, 2015

### Minutes

#### Outreach, Communications, Stakeholders: *Mike Liberati, DuPont*

- DuPont has produced a “Community Involvement Plan” which is required as part of the RCRA process. Many of the outreach activities already in place have been incorporated into this plan.
- Remedial Advisory Panel: First meeting was held February 25<sup>th</sup>. It is made up of 12 panel members from the community and is facilitated by Dave Hirschman (Center for Watershed Protection). Their next meeting will include a tour of the Bank Management Areas (BMAs).
- Landowner meetings: DuPont has held several meetings with on the subject of BMAs with the City of Waynesboro, DGIF and DEQ with the goal of reaching a consensus on conceptual bank stabilization design elements to meet remedial objectives and stakeholder preferences.
  - Conceptual Design Objectives
    - Remedial: reduce Hg loading from banks in the first 2 miles and enhance riparian and aquatic habitat.
    - Stakeholder: preserve high value habitat and facilitate pedestrian access and greenway connectivity.
- Riverfest: SRST has always had a presence at Riverfest. This year DuPont took advantage of the audience and used Riverfest as a public information session by setting up another table with information on the BMA work. Approximately 70+ contacts were made at the event. At the event were Scott Gregory (AECOM), Calvin Jordan and Vince Maiden (DEQ) and Nancy Grosso (DuPont).
- Promotores Program: Contract has been renewed with JMU for another two years.
  - All fact sheets have been translated to Spanish
  - Promotores Jr program is being planned. Curriculum is being rewritten and hope to get back to students in the spring.
  - The fish consumption advisory is being run as an ad in the Spanish language newspaper *Nuevas Raíces* and plans are in the works for an informational article to be written for the paper.
  - “Should I Eat the Fish” brochure has been translated into Arabic and Kurdish.
  - Planning an Arabic/Kurdish advisory workshop in June for health translators.
  - Community Events: Teen health fairs held at Broadway, Harrisonburg and East Rockingham High Schools. Also a family health fair at RMH.
- Media, Website, Other:
  - Mike Liberati interviewed by reporter with WMRA radio station (local NPR affiliate).
  - Mike gave presentation to Waynesboro Rotary Club
  - Website has been updated with approved RCRA reports (under Tech Docs). All SRST presentations since 2001 under Meeting Docs.

### **Remedial Options Program: Robert Brent, JMU**

- Floodplain Soil Amendment Pilot: AECOM/DuPont is investigating effects of floodplain biochar amendments on soil invertebrates, plants and Hg uptake. Phase 1 lab studies are complete and found no adverse effects on biota and potential reduction in MeHg. Phase 2 study to begin next week, and will consist of placing containers in floodplain with amended contaminated soil and worms to validate effectiveness and potential unintended consequences of using carbon amendments in situ.
- Ground water and Surface water Interaction Modeling: Aquanty is using HydroGeoSphere modeling software to simulate ground water and surface water interaction within the banks area during and following storm events. So far, conclusions and general observations are:
  - The degree of bank infiltration is highly dependent on the material properties of the bank, as well as the magnitude of the flood event.
  - In-channel and floodplain events behave very differently and may activate different portions of the bank.
  - During an in-channel event, most of the water enters and leaves the system through the high-permeability layer at the base of the river (where river bottom and bottom of bank meet below base line watertable position).
  - The rate of infiltration during a flood event is approximately an order of magnitude greater than the exfiltration rates during the receding limb.
  - Infiltration into the bank may persist for several days following the peak of the flood event, and the timing of the reversal is related to the soil properties of the system.
- Biochar Effects on Invertebrate Communities: Will Clements used field and microcosm studies to study the effects of biochar on invertebrate communities.
  - Field results:
    - Colonization of stoneflies was significantly lower in trays containing biochar; mechanism unclear.
  - Microcosm results:
    - Biochar increased macroinvertebrate drift and reduced community metabolism in stream microcosms.
    - Effects of biochar in stream microcosms were generally limited to stoneflies (especially early instars).
    - Negative effects of biochar should be evaluated within the context of benefits associated with reduced contaminant bioavailability.
- Relative Risk Model: Wayne Landis developed relative risk model for human and ecological risks in the South River and is beginning integration with EAM model. Currently working on including bank stabilization and Ag BMPs in the Human Health and recreation models. Key findings:
  - Human health risk for the South River is low and less spatially variable than risk to biotic and water quality endpoints.
  - Risk to recreation is moderate with low spatial variability.

- Mercury is not the only stressor of importance; river temperature, discharge, E. Coli bacteria, and phosphorus also drive risk to human health, water quality and biota.
- Mercury Cycling Model: Reed Harris is developing mercury cycling model for application to the South River. Objectives are:
  - Help predict and assess the benefits of bank stabilization.
  - Help interpret monitoring data.
  - Help integrate multi-disciplinary studies carried out on the South River. Do the pieces fit together?
  - Help address uncertainty.
  - Provide another line of support for decisions.
  - Goal is to have modeling completed by Fall 2015 and the report completed by end of 2015.
- Other ROPs activities not discussed at yesterday's meeting but are ongoing include: Enhanced Adaptive Management Framework, Reactive Capping, Characterization and treatment of sediment and soil and Stable Isotope Analysis. BMAs discussed in next presentation.

**Bank Management Ares: *Clay Patmont, Anchor, QEA***

- Loading analysis has been updated. The old analysis did not include the upper reach City reach). New analysis shows first 2 miles producing much more Hg than previously thought. Most of the loading to the South River is occurring within the first 5 miles of river.
- There has been new supplemental soil core sampling done in the banks and because of this new information, the BMA's have been redefined as "Primary" meaning they are contributing 50% of the cumulative THg bank load and "Secondary" meaning they are contributing an additional 40% of the THg bank load.
- 50% of cumulative mercury load is attributable to ~ 5% of banks (Primary corresponds to unit loading > 20 kg Hg/mi-yr). 40% of remaining Hg load is attributable to ~ 20% of banks (Secondary)
- DGIF produced a map of valuable riparian habitat and that map has been incorporated into BMA map.
- Conceptual design of bank stabilization concepts still being developed with stakeholders, but is being based on type of habitat present (low/high quality) and whether BMA is Primary or Secondary.
- Schedule and Next Steps:
  - May – tree survey/marketing and supplemental core sampling
  - May/June – conceptual design development with stakeholders
  - Late June – pre-application permit meeting
  - Early September – preliminary Phase 1A design report
  - Early 2016 – final design, access agreements and permitting

**Exposure Task Team: *Tim Bingman, DuPont***

- Tim Bingman has replaced Annette Guiseppi-Elie (she now works for EPA). Welcome, Tim.

- Poultry Study Summary:
  - For edible tissues, data collection and analysis is complete and there are no unacceptable exposures anticipated using typical ingestion rates. Some HQs > 1 for liver and gizzard ingestion, but this is based on standard ingestion rates for muscle. Additional context would be gained by a comparison of gizzard and liver weights with muscle weights. Next Step is to begin fact sheet for poultry and cattle exposures.
  - For blood and feathers, data collection is complete and preliminary analysis underway. They could provide an indicator of Hg content in edible tissues. Correlations could be improved by including chicken breed as a variable.

**RCRA Update: *Vince Maiden, DEQ***

- Ecological Risk Assessment has been approved by DEQ.
- Human Health Risk Assessment is under revision and should be completed by the end of year (hopefully much sooner).
- DEQ and DuPont both very satisfied with progress of meeting milestones and following a very aggressive schedule. Part of this success can be attributed to SRST-generated studies.

**Monitoring Task Team: *Ralph Stahl, DuPont***

- There are two main drivers for monitoring activities. These include: 1) the legal agreement with NRDC obligating DuPont to monitoring, and 2) monitoring to test remedy effectiveness.
- Upcoming Monitoring:
  - May – fish sampling currently underway.
  - June – Terrestrial exposure (wrens, worms, spiders, soil) and aquatic exposure (sediment, clams, periphyton, mayflies, benthic community)
  - July – snapping turtles.
  - Habitat monitoring will also be occurring for BMA's to monitor pre- and post-construction habitat.
- Fish sampling: collecting both fillet and plug data. If spring fillet and plug data correlate well enough and agree with past sampling, the team may only collect plug data in fall and after.
- DEQ considering sampling walleye in Shenandoah and large holdover trout in South River during their 2017 sampling.
- Other activities:
  - Database construction
  - Statistical model/predictions
  - Data simulation and analysis
  - Training - TBD

**Wrap Up**

**Upcoming meetings:**

- August – SRST 18<sup>th</sup> and 19<sup>th</sup>

- September – BMA pre-design meeting TBD
- October – SRST 21<sup>st</sup> and 22nd