

**West Virginia Watershed Assessment Pilot Project
Second Expert Workshop Notes
January 31, 2012**

Participant List:

TM Terry Messinger, USGS
TG Tom Galya, OSM
TC Tim Craddock, DEP (NPS program)
JB Jeff Bailey, DEP (WAB)
NM Nick Murray, DEP (WAB)
DS Dennis Stottlemyer, DEP
GP Greg Pond, EPA
CM Christine Mazzarella, EPA
JG Joy Gillespie, EPA
GG Greg Gies, EPA
JA Jim Anderson, WVU
DB Danny Bennett, DNR
JY Jessica Yeager, Potesta & Associates
KR Karri Rogers, Potesta & Associates

TNC participants:

AC Amy Cimarolli
MD Misty Downing
KF Keith Fisher
DP Diane Packett
RT Ruth Thornton

PROJECT REVIEW

DB-protected lands include mineral rights ? No, no data.

GP-riparian forests, “natural cover” can be shrub/scrub or forest, high conservation values could be ranked higher, are there different coverage to tell us natural/intact riparian areas vs e.g. old fields now reforested.

CALL for more river gages-idea, contact WV Gaging Program about grants/needs

Wetlands

DB-focused on rare species, is too limiting...DNR in final stages of wetlands (talk to Keith Krantz) on wetland functions (storage, habitat)

JA-function, not animal data, some plant data

RT could habitat types be used instead?

TM Scales of wetlands? Vernal pools counted, small places? RT-used NWI

DB a lot of small wetlands found to be missing now from recent field work

RT hydric soils counted, potential for restoration noted, tried modeling but data incomplete

JA 2.5x # wetlands on land vs in NWI

CM Model as proxy? MD tried, soils data inaccurate/incomplete for Elk

GP Atilla software from Las Vegas (landscape tool, in ArcView 3), models P & N. This would give outside validation by a model that wetlands are important.

-Atmospheric deposition N important here, “Possible validation of these wetlands in their position; this cluster of wetlands is important because less P even with development around it”

Forests

DB Timber harvests by type?

DNR Logging enforcement system data set potentially with location and methods—new tool from DOF

GP coal production and water quality, yes But in upland terrestrial model, is surface disturbance more accurate indicator? Surface mining is more important than coal production in the uplands.

TG Underground mining factor (discharges with sulfate, and volumetrically), importance of dewatering streams, long wall and second mining operations-*tough data to get, DEP is compiling*

TG GES Mine pool data (underground water punching out, WVU can predict where); said they have reports of known issues in certain places, probably nothing geospatial though. Mine pools are correlated with water quantity of streams

DS does it involve artesian points, Tom said it includes some

DB/DS new rule to id where water will be withdrawn, but data not reported until up to 2 years later. Marcellus water used hard to quantify because sometimes only used for a short time, and sometimes is even trucked in from other areas.

RESULTS OVERVIEW

Thresholds

GP General account of # quality vs # stress indices

There are more stress indices b/c easier to find. Each counted on its own merits.

=====breakout groups=====

JA suggested use of AHP (Analytic Hierarchy Process) to decide weightings based on expert opinion (would make results more “publishable”)

DB would expect culverts to be weighted as much or more than dams (are just as impactful and there are many more of them than just a few dams)

TM create placeholder metrics for those known issues but with incomplete/ less accurate/ pending data (such as underground mining issues, the Marcellus issue, etc); also note which data will be updated soon

DB would expect more correlation between WQ metrics (like conductivity/GLIMPSS, etc); or the impaired streams/GLIMPSS (several people actually described these datasets as literally the same data, just in different formats...?)

DB drainage ditches/tiled wetlands (NRCS or WVDA) – (MD explained that this data has been searched for but not found, esp. not in geospatial format)

DB questioned having trout streams in Biodiversity, since trout streams are not diverse (at most 4 species)

DB cumulative effects of metrics and weighting on results: maybe effects are watered down by using so many metrics?

DB need a general diversity index, not just rare spp

TM/JY use taxa richness from GLIMPSS; JB 200 organism subsample

-may be useful to maintain/distribute a list of those data/metrics that were considered but not used or dropped due to incompatibility or complete lack of data

DB Mike or Jackie Strager water quality/water quantity study of HUC12s throughout the state (ARC)

DB should differentiate between NRCS dams and Army Corps dams which are much larger

-suggestion to compare known high quality or low quality (WQ) streams to “model” results, see what differs and why

TM sewers, “others”, augment some, but half as much as dams. Flow alteration vs flow reduction. Maybe “flow alteration” as another name for water quantity.

JA Strager study on water quality and quantity

ID? Additional metric/s for Protected Lands is level of interest/activity: existence of watershed group, watershed plans, TMDL plans

GP use reference streams to help define thresholds, tie this to landscape (box and whiskers plots, etc)

GP define land use metrics based on WQ station catchment

GP PCA: find the best and worst watersheds along the gradient, see if they are the same as what falls out of the rankings. Try PCA just on water quality metrics (not surrogates) and see what happens.

GP try Discriminant Function Analysis: see what variables contribute the most towards e.g. GLIMPSS index.

CM conducted study in southern WV on % mining impacts thresholds (Tug River?)

-overall agreement that categorical analyses was very useful, CM especially meaningful to the “higher-ups”. Maybe the categorical analysis looks the same for planning units on the HUC12 level, but would look different for smaller catchments

TC TMDL stressors STEPL (Spreadsheet Tool for Estimating Pollutant Load) created by TetraTech EPA, estimates contributions based on soil units, septic systems, agriculture (may have some threshold values)

-mention again of TMDL data from the Mon for info on septic ranks by watershed (seemed to be confusion of what the study and data actually presented)

TC NPDES should not be a big issue because it implies regulatory control over source; CM that assumes people are in compliance, the regulations are sufficient, etc

-may need different thresholds for duplicate metrics in different indices

-suggestion to “turn off” more questionable metrics and re-run (basically, play around with data to see what’s happening)

TC restoration funding is TMDL/303d driven (seemed to desire analysis that reflects this)

-the “bad stream, good neighborhood” idea, where a higher priority might be placed on a lower quality catchment surrounding by good quality, or vice versa, such as a mid-quality stream in a bad neighborhood creating refugia and thus being higher priority (this whole concept was debated back and forth)

GP some issue with the word Fair (may not as strongly indicate the degraded or impaired status)

CM categorization may look more meaningful and “accurate” (as expected) at the catchment scale

CM suggested using air deposition data (apparently there is more detailed work from EPA covering the whole state of WV?)

-use Paw Paw Creek to dissect and see what’s happening with the various metrics/methods

TG – For Streams Water Quality modeling recommendation to weight Underground mining 2-3x heavier than surface mining.

JB – consider using only random WQ sample points, other points target low-quality areas, potential for biasing results

CONSOLIDATED ANALYSIS/FUTURE THREATS OVERVIEW

DS List of references available? Yes, source of data

=====breakout groups=====

DB present future threats on a sliding scale, or scenario-based (ie Low, Medium, High) or reflecting market forces (Weak Economy/Strong Economy, etc)

TM refine Marcellus metric to reflect thickness (thicker is correlated with higher gas extraction potential)

JY Pittsburgh coal seam W of the Monongahela River is almost entirely mined out (not as much E of the Mon), there should be more surface mining in the Mon in the future than underground; ash formation (?). 4-5 seams above Pittsburgh not mined out.

-consult Pittsburgh ACE about proposed dams; Fish and Wildlife about private dam removals (DB mentioned plans to remove dams on West Fork)

-check school boards for future growth information

-display Phase II results as an overlay, not necessary to combine the two sets of results

KR Chesapeake TMDL work may have datasets available, particularly CAFOs

Under Priority Areas, include metrics such as # of Active Watershed Associations, Abandoned mine lands (as funding opportunity).

Supportive information (not in rating, but as overlays): whether zoning is in place, stormwater regulation.

Future water source – mine pools, differ greatly in water quality depending on geology

INTENDED RESULTS/FINAL PRODUCT

Other data: DS Aerial photos, current and historic

Other data: search tool so someone could find their own stream; Name/County/concatenate program by stream name and place that (GP); maybe HUC12, nearest town, quad name

Other data: land use activity in the subwatershed so if looking for restoration site could see ag areas, for example; ID proposed activities, etc. so can find places that are to be developed; show secured land (e.g. CE GAP status xx, without landowner name)

Current data at DEP could be called up, but TNC has done a lot of data QAQC and selection to improve data set for project. Raw data won't be able to just uploaded into this system for small watershed info and for heavily weighted factors. Would require a lot of time to create tool to adjust raw data. AND/OR feedback to data creators what datasets need improved/QAQC

Rare spp data-individuals will go to DNR Heritage (data agreement)

Can we show wind/pipelines on an interactive map (not sharing data)

Water Quality information? Click on data point and see it? Yes it'd be valuable to DB when reviewing a permit if he could see information with a click; it is public information

TC Not a ranking tool but if targeting a site, good to see loads of N, bacteria...? Annuals loads require time series of flows (TM) and this is beyond our scope

GP idea: based on catchment area could you have a high/low ranking? Would have to calculate drainage area...Stream Stats in PA, is it coming to WV? it could with funding, Drainage Area Tool is included in it. It looks for gages, models 7Q10...a WV tool 'went away' (DB spoke of)

If seeking potential wetland soils to restore; want soils...Mysti has included hydric & partially hydric soils—she has also reviewed old maps

Is there anything else?

TC Providing tool, then might think about providing technical assistance. List of partners, contacts of watershed groups, current plans/TMDLs for watershed

TM Biggest concern where have important threats / issues but no data to represent them in model (underground unmined, water removal from drilling, stream loss)

-how to highlight data problems within the tool/Incorporate a measure of uncertainty?

TC will have access to local input to use where necessary

AC Working groups/expert local knowledge is important to incorporate

For poor incomplete sets, could have water quality or some other data serve as an override of status if it is terrible, for example, but other things have made it look not too bad

Explain use of 0 vs null

Keep weights same across state?

TC-differences across state-energy extraction high in Western All Plat and Cumberlands, not so bad in GBR and eastern panhandle. Are all weighted same across state? KF keep consistent across state, makes process/modeling easier; non-presence of issue = 0 or null? DB watering down if use 0 instead use null; RT prefers Null but sees his point, if a lot of factors then individual important ones get watered down.

Rank high and low sulphur coals as different metrics? DS thinks other metrics e/g/ water quality will catch it...different impacts but still many.

People comfortable with keeping streams/wetlands/uplands separate.

When you did PCA did you to separate or all together? Did by streams, wetland and uplands, not separated by metrics. GP suggests PCA by index, thinks it may be smeared by doing it across. Want more sites than variables (keep in mind).

Do we want to let 'power users' to be able to have options for restoration /protection area ID?

TC does not like idea of allowing this to protect TNC/team of creators' work from being used/misused by others with different goals, messages – potential to manipulate results.

DS Recommends keeping tool standard

ID think about making ability to query; DB there is value in letting others tweak it for their use

Need to be able to filter out some information by users (spruce uplands vs stream sites); see information about how make rankings but don't let ratings change

GP idea: play with data scenarios – mitigation tool – if raise GLIMPSS, certain issues, could see how rank/ score could change the color- target things weighted heavily to fix, could plug in post mitigation monitoring data to see if you've improved it

Is there anything we should get rid of? Test for a couple master variables – give some watersheds to DEP to get their expert judgment rankings; let statistics determine which variables make data fall within DEPs rankings—try to discover /test reality to see if any variables are highly significant to getting to those same rankings

TM Under water quality, let hard data drive it, let surrogates be downweighted.

Should we get rid of roll ups of stressors/conditions being rolled up separately? GP combine just in to Quality, get rid of Stressors (those working on stressors will look for bad water quality) End up with just overall which we have. Would eliminate the distraction of the colors that don't match up in the quality/stressor maps.

FEEDBACK?

DS, landfills? Delete? They are already part of impervious surfaces and they are (should be) represented as NPDES points.

KF different categories?, have 10 categories to maintain across all results range

WRAPUP

GP Freshwater meeting March 28, EPA Region 3 FRESHWATER BIOLOGISTS MEETING; in Berkeley Springs, Talks on Thursday, 15-20 minutes; 125-145 PEOPLE, PLACE TO ASK FOR FEEDBACK, DATA REQUESTS POSSIBLE, SOLICIT FEEDBACK. FRIDAY WORKSHOPS-MAYBE ONE FOR NEXT YEAR COULD BE PLANNED.