

EVALUATION OF IRON CRITERION FOR TROUT WATERS

WQS Public Meeting

May 18, 2009

WV Water Quality Standards

- ▣ **Definition at 47CSR2 - 2.19:**

"Trout waters" are waters which sustain year-round trout populations. Excluded are those waters which receive annual stockings of trout but which do not support year-round trout populations.

- ▣ **47CSR2 – 6.3.b establishes designated use:**

Water Use Category B2 – Trout Waters

- ▣ **Numeric criterion in Appendix E, Table 1 :**

Four-day average not to exceed 0.5 mg/l more than once per three years on the average (aquatic life protection, chronic)

Contrast

- ▣ EPA recommended chronic criterion = 1.0 mg/l
- ▣ PA - 1.5 mg/l
- ▣ KY/DE/NC/SC - 1.0 mg/l
- ▣ DC - 1.0 mg/l (dissolved)
- ▣ MD/VA/OH/TN - no criteria
- ▣ Menendez (WVDNR) research (1976) - found that iron should not exceed 1.37 mg/l to protect all development stages of brook trout

TMDL Issues

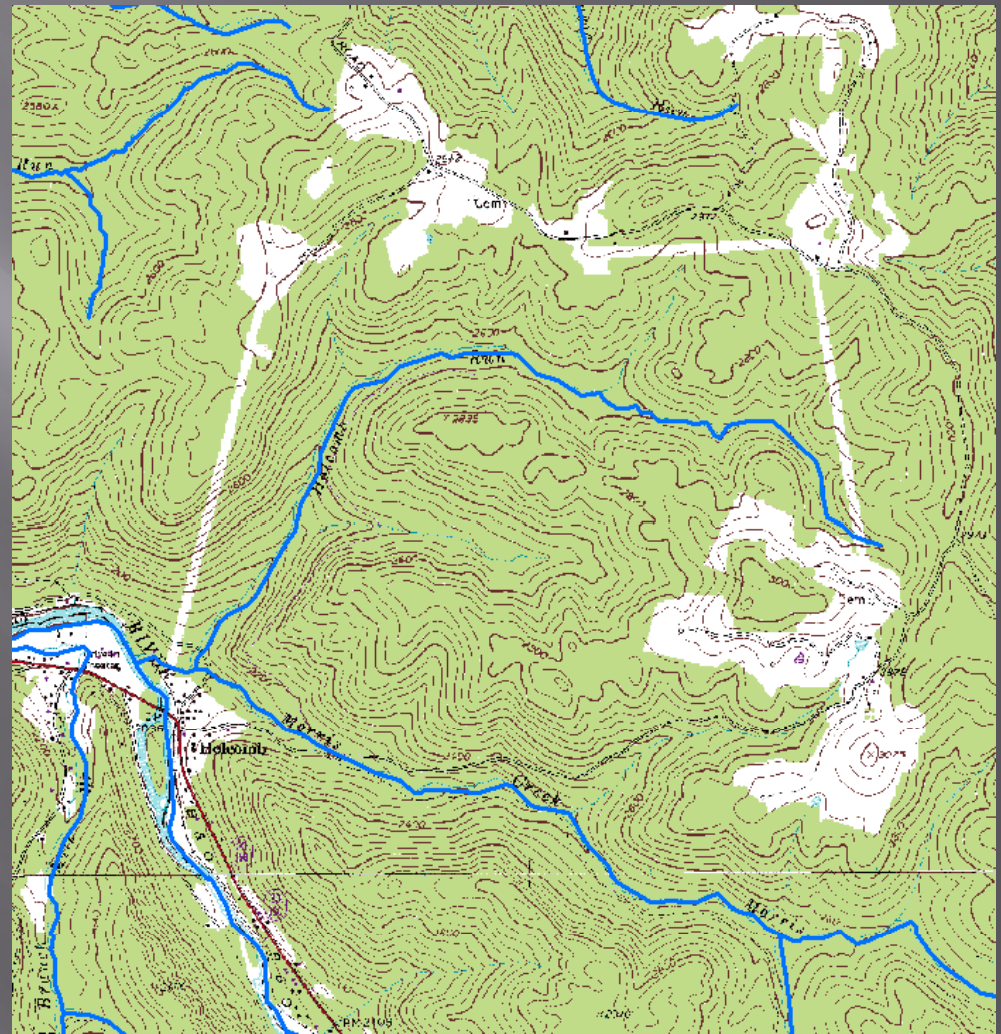
- ▣ WV TMDLs – difficult to show attainment by modeling
 - Fe positively correlated w/ TSS, ratio between 0.02 and 0.09
 - If ratio is high, model doesn't show attainment of existing criterion even with maximum reductions (upland nps to forest, streambank to best observed, point sources to criterion and no future growth allowance)
 - Non-attainment predicted in response to large precipitation events or a series of significant storms that elevate instream TSS and iron concentrations - magnitude not extreme, but much more frequent than 1/3yr
- ▣ TMDLs propose phased implementation and additional study

Research Plan

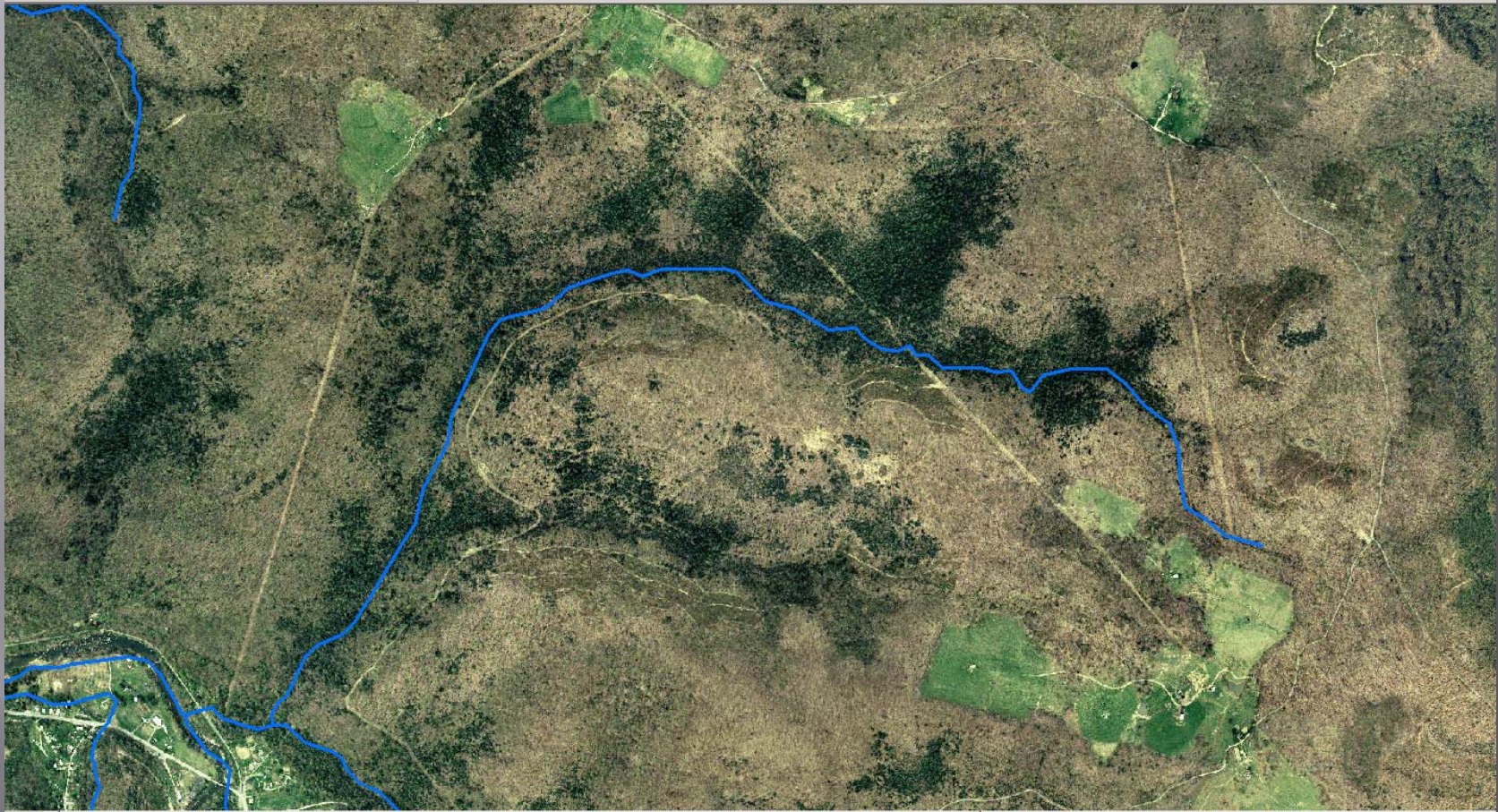
- ▣ “HD” modeling of known trout streams
- ▣ Output - water column total iron concentrations that existing trout populations are exposed to, under a variety of magnitude, duration and exceedance frequency statistics
- ▣ Potential uses:
 - Refinement of background loading in TMDLs
 - Reevaluation of water quality criterion
- ▣ Modeling supported by intensified monitoring:
 - Iron and TSS water quality across hydrograph during multiple storm events
 - Stream channel/riparian zone assessments
 - Watershed soils classification, analyses
 - Land use/land cover

Holcomb Run (WVKG-34-D-1)

- Brook Trout population documented 2008
- Mostly forested

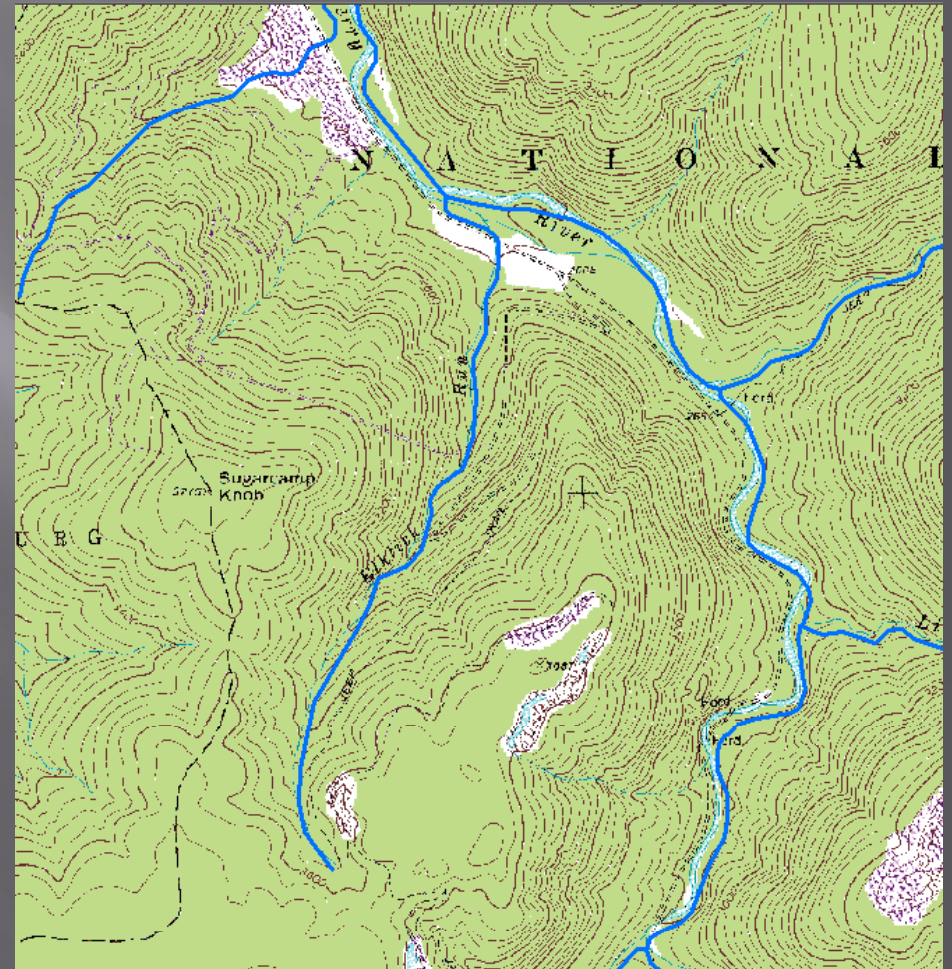


Holcomb Run



Elklick Run (WVKG-34-G-5)

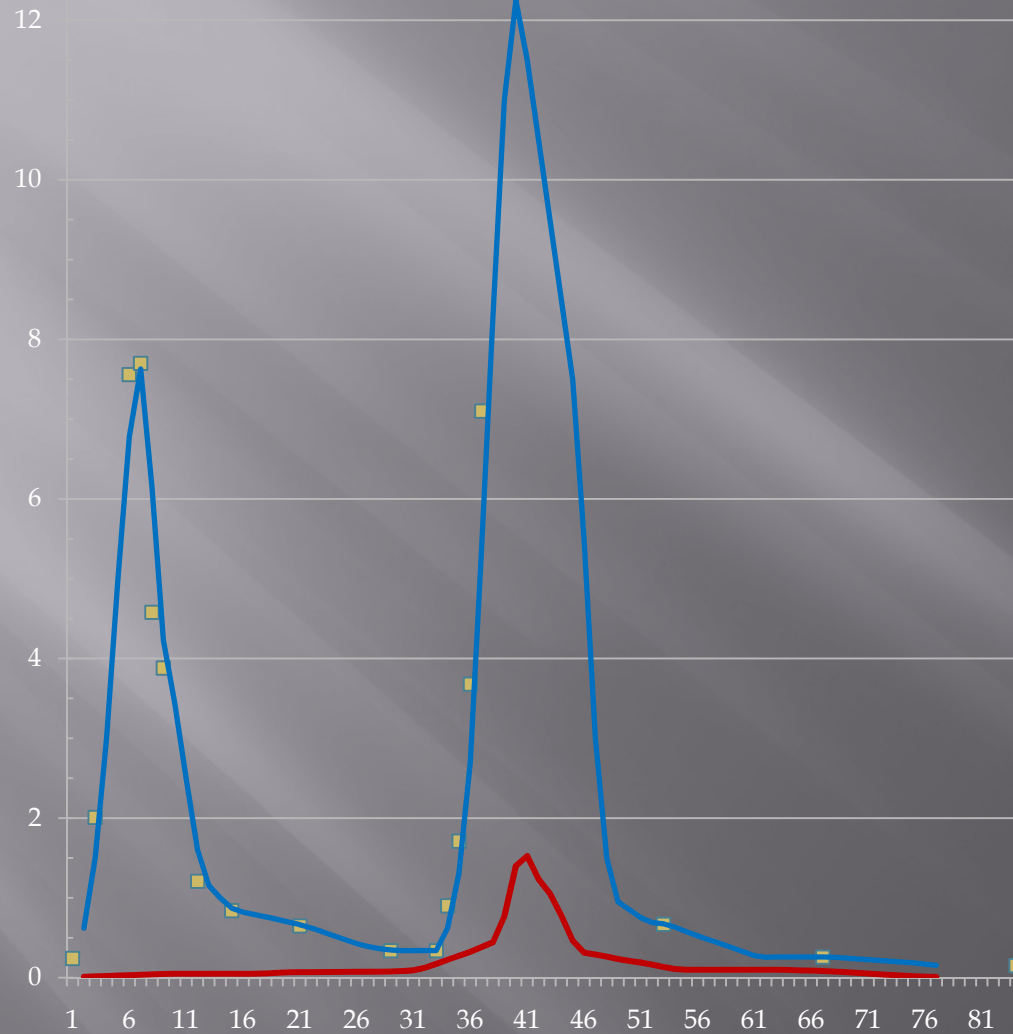
- ▣ Brook Trout population documented 2008
- ▣ Timber harvesting and reclaimed mining in watershed



Elklick Run



T. Fe mg/l



Rainfall
2" in 24-hr
3.2" in 40 hr

4-Day Average
Holcomb - 0.15 mg/l
Elklick - 1.75 mg/l

Fe/TSS
0.03 Holcomb
0.04 Elklick

— Elklick
— Holcomb

Timeline

- ▣ Modeling contract - May 2009
- ▣ Modeling work complete - December 2009
- ▣ Results will be available for consideration in 2011 triennial review