Aluminum TMDL Addendum for Selected Streams in the Lower Kanawha Watershed, West Virginia

Final

September 2006

DISSOLVED ALUMINUM TMDL ADDENDUM FOR HEIZER, TUPPER, AND TWOMILE CREEK WATERSHEDS

TMDLs Based Upon the Revised Warmwater Aquatic Life Criterion

On January 9, 2006, EPA approved a revision to West Virginia's water quality standard regulations relative to numeric water quality criteria for aluminum The approved revision temporarily modifies the chronic, aquatic life protection, dissolved aluminum criterion for warmwater fisheries During an interim period from the date of approval until July 4, 2007, the criterion value that is effective for Clean Water Act purposes is 750 micrograms per liter (µg/L) The previously effective value was 87 µg/L If no further legislative action is taken, the 87 µg/L criterion will again become applicable It is important to note that the approved revision does not change dissolved aluminum water quality criteria for troutwaters.

TMDLs must be based upon the effective water quality standards at the time of development Throughout this TMDL development process, which began in January 2002, the impairment status of waters and the calculation of aluminum TMDLs and allocations were based upon the previously effective, 87 µg/L criterionWhen the TMDLs were nearing completion, DEP learned of EPA's impending approval of the water quality standard revision and suspended development activities DEP has now reevaluated the impairment status of warmwater fisheries pursuant to the 750 µg/L criterion and recalculated TMDLs and allocations for impaired watersThe recalculated TMDLs and allocations for the entire watershed are contained in this addendum

Because of the temporary nature of the criterion value, the draft aluminum TMDLs for warmwater fisheries that were based upon the 87 µg/L criterion remain a component of the Lower Kanawha River watershed TMDL, to be implemented only if the criterion becomes effective in the future All displays of aluminum impairments contained in the previously advertised documents (Lower Kanawha River Watershed TMDL Report, Lower Kanawha River Watershed Appendix reports and allocation spreadsheets) relate to the 87 µg/L criterion The ArcExplorer Project has been supplemented with new information for TMDLs based upon the 750 µg/L criterion.

Table 1 lists the impaired streams based on the previous and current dissolved aluminum criteria.

Table 1 Aluminum Impaired Streams in the Heizer, Tupper, and Twomile Creek watersheds

Subwatershed	Stream Code	Stream Name	Impaired Per Previously Effective Chronic Warmwater Dissolved Aluminum Criterion = 87 µg/L	Impaired Per Currently Effective Chronic Warmwater Dissolved Aluminum Criterion = 750 µg/L
Heizer Creek	WVKP-1	Heizer Creek	X	
	WVKP-1-A	Manila Creek	X	X
	WVKP-1-A.3	Coal Hollow	X	X
	WVKP-1-A.6	UNT/Heizer Creek RM 2.3	X	X
	WVKP-1-A-0.4	Sulphur Hollow	X	X
	WVKP-1-A-0.48	UNT/Manila Creek RM 2.3 (#4 Hollow)	X	X
	WVKP-1-A-0.6	Alcocks Hollow	X	X
Tupper Creek	WVKP-13	Tupper Creek*	X	X
	WVKP-13-C.5	Union Fork	X	X
	WVKP-13-C.5-1	UNT/Union Fork RM 0.2	X	X
Twomile Creek	WVK-41	Twomile Creek	X	
	WVK-41-D.5	Rich Fork	X	X

* Impairment pursuant to current criterion represents Tupper Creek main stem above Legg Fork

Table 1 demonstrates that many of the waters that were identified as dissolved aluminum-impaired pursuant to the 87 µg/L chronic criterion are also impaired pursuant to the 750 µg/L criterion Those waters have TMDLs presented in this addendum, but the calculated values for load allocations, wasteload allocations and TMDLs have been revised as necessary to achieve the currently applicable criterionTMDLs are not presented for the mainstems of Heizer Creek, Twomile Creek and Tupper Creek below its confluence with Legg Fork because those waters are not impaired pursuant to the 750 µg/L criterion.

As discussed in the TMDL and Technical Reports, dissolved aluminum TMDL scenarios were developed by comparing DESC-R output directly to the TMDL endpointIf the predicted dissolved aluminum concentrations exceeded the TMDL endpoint, the total aluminum sources represented in MDAS were reducedTo account for the revised warmwater aquatic life criterion, TMDL scenarios were evaluated by selecting the dissolved aluminum TMDL endpoint for the acute criterion for aquatic life (712.5 micrograms per liter (µg/L); based on the 750 µg/L acute criterion for aquatic life minus a 5 percent MOS)

The revised dissolved aluminum TMDLs are shown in Table 2The TMDLs are based on a dissolved aluminum TMDL endpoint; however, sources are represented in terms of total aluminum and therefore are presented in the form of total aluminumDetailed source allocations (load and wasteload allocations) associated with these revised aluminum TMDLs can be found in the allocation spreadsheet called “Lower Kanawha Dissolved Aluminum Addendum TMDL_Allocations_7_07_06.xls”The TMDLs shown in Table 2 and the source allocations in the subject spreadsheet are to be implemented pursuant to currently effective criteria

Table 2 Aluminum TMDLs for Heizer, Tupper, and Twomile Creek watersheds

Subwatershed	Stream Code	Stream Name	Load Allocation (lb/yr)	Wasteload Allocation (lb/yr)	Margin of Safety lb/yr)	TMDL (lb/yr)
Heizer Creek	KP-1-A	Manilla Creek	4,489	NA	236	4,725
Heizer Creek	KP-1-A.3	Coal Hollow	256	NA	13	270
Heizer Creek	KP-1-A-0.6	Alcocks Hollow	76	NA	4	80
Heizer Creek	KP-1-A-0.48	UNT/Heizer Creek RM 2.3	246	NA	13	258
Heizer Creek	KP-1-A.6	UNT/Manila Creek RM 2.3 (#4 Hollow)	44	NA	2	46
Heizer Creek	KP-1-A-0.4	Sulfur Hollow	339	NA	18	357
Tupper Creek	WVKP-13	Tupper Creek (above Legg Fork)	5,190	NA	273	5,463
Tupper Creek	WVKP-13-C.5	Union Fork	1,249	NA	66	1,315
Tupper Creek	WVKP-13-C.5-1	UNT/Union Fork RM 0.2	903	NA	48	951
Twomile Creek	WVK-41-D.5	Rich Fork	558	NA	29	587

NA = not applicable; UNT = unnamed tributary.

pH TMDLs

As discussed in Section 7.4.1 of the TMDL Report, a surrogate approach was used for TMDL development of pH-impaired watersIt was assumed that reducing in-stream metals (iron and aluminum) concentrations to meet water quality criteria (or TMDL endpoints) would result in meeting the water quality standard for pH The original iron reductions, coupled with the aluminum reductions needed to achieve the revised criterion, maintain acceptable pH quality in affected waters, as depicted on the "pH Results" page of the "Lower Kanawha Dissolved Aluminum Addendum TMDL_Allocations_7_07_06.xls" spreadsheet

Public Participation

In addition to the public meetings and public notice associated with the original of Draft TMDLs, the Draft Dissolved Aluminum TMDL Addendum was advertised in local newspapers on July 13, 2006 One interested party submitted comments during the public comment period that began on July 13, 2006 and ended on August 11, 2006 Those comments are compiled and responded to belowComments suggesting editorial revisions were also received from the United States Environmental Protection Agency Region 3, and DEP made the suggested revisions.

The commenter disagreed with the revision of the dissolved aluminum water quality criteria

The currently effective dissolved aluminum water quality criteria were properly promulgated in accordance with applicable rules for the revision of water quality standards and have received EPA approval The Dissolved Aluminum Addendum reflects DEP's responsibility to develop TMDLs for applicable water quality standards The dissolved aluminum TMDLs that were developed pursuant to the previously applicable, 87 µg/L, chronic aquatic life protection criterion for warmwater fisheries remain a component of this effort, but are to be implemented only if that criterion becomes applicable in the future

The commenter objected to the removal of Heizer Creek from the Section 303(d) list

Heizer Creek has not been removed from the Section 303(d) ListThe 303(d) list identifies waters for which TMDLs must be developed As a general practice, impaired waters are removed from the list upon TMDL development and categorized in the Integrated Report as Category 4A watersCategory 4A waters are those that are impaired or threatened for which TMDLs have been developedAll impaired waters in the Heizer Creek watershed will ultimately be classified in Category 4A of the Integrated Report upon EPA approval of the TMDLs.

The mainstem of Heizer Creek is on the Section 303(d) list relative to iron impairment It was not listed as impaired for dissolved aluminum on the 2004 Section 303(d) listA TMDL was presented pursuant to the previously applicable criterion because predictive modeling indicated that a reduction existing pollutant loading is necessary for to meet the 87 µg/L criterion

All of the Heizer and Manila Creek tributaries that were listed for dissolved aluminum pursuant to the previously applicable criterion are also impaired pursuant to the 750 µg/L criterionThose waters are currently contained on the Section 303(d) List in relation to dissolved aluminum The TMDLs presented in the addendum include calculated values for load allocations and wasteload allocations as necessary to achieve the currently applicable criterion An average 90% aluminum reduction in the Heizer Creek watershed remains necessary to achieve the 750 µg/L criterion in the tributaries.