UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, Pennsylvania 19103-2852

Katheryn Emery, Director
Division of Water and Waste Management
West Virginia Department of Environmental Protection
601 57th Street SE
Charleston, West Virginia 25304

Dear Ms. Emery,

The United States Environmental Protection Agency, Region 3 (EPA) approves the total iron, fecal coliform, pH, and dissolved aluminum Total Maximum Daily Loads (TMDLs) for the Little Kanawha River Watershed. The West Virginia Department of Environmental Protection (WVDEP) submitted the report, *Total Maximum Daily Loads for the Little Kanawha River Watershed, West Virginia, Final Draft Report*, the technical report, technical appendices, and TMDL allocation spreadsheets to EPA for review and approval on August 30, 2023, with minor revisions to the TMDL report re-submitted on September 21, 2023. Draft versions of the TMDLs were released for public comment beginning on June 14, 2023, to July 17, 2023. The TMDLs were established to address designated use impairments as identified on West Virginia's Section 303(d) List.

The TMDLs were established and submitted in accordance with Sections 303(d)(1)(c) and 303(d)(2) of the Clean Water Act. EPA's review concludes that, once fully implemented, the load and wasteload allocations in the TMDLs are established at levels necessary to lead to the attainment of the applicable water quality standards. A copy of EPA's rationale for approval is enclosed.

As you are aware, any new or revised National Pollutant Discharge Elimination System permits must be consistent with the assumptions and requirements of the TMDL wasteload allocations pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please continue to submit all such permits to EPA for review as per EPA's letters dated September 29, 1998, and July 7, 2009.

If you have any questions, please do not hesitate to contact me at 215-814-2737, or have your staff contact Ms. Jillian Adair, 303(d) Listing Team Lead, at 215-814-5713 or adair.jillian@epa.gov.

Sincerely,

CATHERINE LIBERTZ
Digitally signed by CATHERINE LIBERTZ
Date: 2023.09.27 15:51:29 -04'00'

Catherine A. Libertz, Director
Water Division

Enclosure
cc: Ms. Mindy Neil, WVDEP (via email)
Mr. Nick Murray, WVDEP (via email)

Decision Rationale

Total Maximum Daily Loads for the

Little Kanawha River Watershed, West Virginia

I. Introduction

The Clean Water Act (CWA) and its implementing regulations at 40 CFR 130 require that a Total Maximum Daily Load (TMDL) be developed for those waterbodies identified as impaired by a state where technology-based effluent limits and other pollution controls do not provide for the attainment of water quality standards. A TMDL establishes a target for the total load of a particular pollutant that a water body can assimilate and divides that load into wasteload allocations (WLA), given to point sources, load allocations (LAs), given to nonpoint and natural background sources, and a margin of safety (MOS) which takes into account any uncertainty. Mathematically, a TMDL is commonly expressed as an equation, shown below.

$$TMDL = \sum WLAs + \sum LAs + MOS$$

This document sets forth the U.S. Environmental Protection Agency, Region III's (EPA) rationale for approving the TMDLs submitted by the West Virginia Department of Environmental Protection (WVDEP) for the Little Kanawha River watershed. WVDEP's submission includes 357 TMDLs for total iron, 130 TMDLs for fecal coliform, two TMDLs for net acidity (pH), and one TMDL for dissolved aluminum[1]. The TMDLs were developed to address impairments of water quality standards as identified on West Virginia's Section 303(d) list of water quality-limited segments. WVDEP submitted the report, *Total Maximum Daily Loads for the Little Kanawha River Watershed, West Virginia* (hereinafter referred to as the "TMDL Report"), to EPA for final review and action on August 30, 2023. To correct minor errors, WVDEP re-submitted a revised TMDL report to EPA for final review and action on September 21, 2023[2]. EPA's decision is based upon its administrative record, which includes the TMDL Report, WVDEP's transmittal letter, and information in supporting files provided to EPA by WVDEP. EPA has reviewed and determined that the TMDLs meet the requirements of Section 303(d) of the Clean Water Act and its implementing regulations at 40 CFR Part 130 including but not limited to:

1. TMDLs are designed to implement applicable water quality standards.
2. TMDLs include wasteload allocations and load allocations.
3. TMDLs consider natural background sources.

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[1] EPA notes that WVDEP has not submitted TMDLs for every impaired waterbody segment-pollutant combination within the Little Kanawha River watershed. The scope of EPA's action is limited to the TMDLs that have been submitted.

[2] EPA notes that after EPA transmits notice of its approval action of these TMDLs to WVDEP, WVDEP will edit its final draft report to remove draft watermarks/notations and include EPA's approval date. No other changes beyond these administrative edits are anticipated.

4. TMDLs consider critical conditions.
5. TMDLs consider seasonal variations.
6. TMDLs include a margin of safety.
7. TMDLs have been subject to public participation.

In addition, EPA has considered and finds acceptable the reasonable assurances set forth in the TMDL Report.

From this point forward, all references in this rationale can be found in the TMDL Report and WVDEP's *Total Maximum Daily Loads for the Little Kanawha River Watershed, West Virginia: Technical Report*, unless otherwise noted.

II. Watershed Background

The Little Kanawha River is a tributary of the Ohio River, located within the Central Appalachian ecoregion, which joins the Mississippi and flows to the Gulf of Mexico. The Little Kanawha River watershed consists of land draining to the Little Kanawha River, which begins at its headwaters on an unnamed ridge near the community of Kanawha Head and flows westward to join the Ohio River in the City of Parkersburg. The Little Kanawha River is approximately 171.4 miles (275.9 km) long from its headwaters to the Ohio River, and the modeled portion of the watershed encompasses 1,763.7 square miles (4,567.9 km^2) excluding the Hughes River watershed (528.4 square miles) and adjacent area draining to Burnsville Lake (15.6 square miles). Maps of the impaired waters are presented in Figures 5-1 and 7-1 of the TMDL Report, and the maps indicate the modeled portion of the watershed.

The TMDL Report includes TMDLs for 364 assessment units (stream segments) in the Little Kanawha River watershed. Table 3-3 of the TMDL report presents the waterbodies and impairments for which TMDLs have been developed. TMDLs have been developed to address exceedances of numeric water quality criteria for total iron, fecal coliform, pH, dissolved aluminum, and dissolved oxygen. TMDLs for total iron and fecal coliform will address the causes of biological impairment in 61 stream segments in the Little Kanawha River watershed, which were listed as biologically impaired based on the narrative water quality criteria of 47 CSR §2-3.2.e.&i. These waterbodies and the associated causes of biological impairment that are addressed by these TMDLs are listed in Table 4-1 of the TMDL report.

TMDLs were developed for some impairments identified during pre-TMDL monitoring, even though those impairments had not previously been identified on West Virginia's Section 303(d) list. In certain instances, pre-TMDL monitoring demonstrated lack of impairment and may be used as a basis for removing a previously listed impairment from a future Section 303(d) list. Appendix 1 of this Decision Rationale presents the impaired waterbodies in the Little Kanawha River watershed for which TMDLs have been developed.

The Hughes River watershed is within the Little Kanawha River watershed, but Hughes River and its tributaries were excluded from this TMDL development effort because WVDEP already developed and EPA approved TMDLs for those stream segments in 2018. The loads prescribed within WVDEP's 2018 TMDLs for the Hughes River and its tributaries were included as contributing loads to the TMDLs approved herein for the Little Kanawha River mainstem stream segments located below the Hughes River watershed confluence. Within this Decision Rationale, all references to the Little Kanawha River watershed refer to the portion of the watershed that was modeled as part of this TMDL development effort (i.e., excluding the Hughes River watershed).

In 2000, EPA, with support from WVDEP, developed TMDLs for total iron and total aluminum for the Little Kanawha River and five of its tributaries: Reedy Creek, Spring Creek, Sand Fork, Oil Creek, and Saltlick Creek (USEPA, 2000). In 2008, WVDEP developed TMDLs for iron, manganese, and fecal coliform in selected streams in the Little Kanawha Watershed: Duck Creek, Lynch Run, UNT/Lynch Run RM 0.9, Duskcamp Run, Right Fork/Duskcamp Run, and Copen Run (WVDEP, 2008). All impaired stream segments within the Little Kanawha River watershed for which TMDLs were developed in 2000 and 2008 have been re-evaluated and new TMDLs, consistent with currently effective water quality criteria, are presented for all currently identified impairments, aside from existing sedimentation/siltation TMDLs for Mountwood Park Lake and Saltlick Pond 9. Therefore, all of the TMDLs approved herein supersede all previously approved TMDLs for the same waterbodies and pollutants, with the exception of the existing sedimentation/siltation TMDLs for Mountwood Park Lake and Saltlick Pond 9, which remain in effect. In addition, because of subsequent changes in water quality criteria, all previously developed total aluminum and manganese TMDLs are no longer "available wasteload allocation for the discharge" within the meaning of 40 C.F.R. § 122.44(d)(1)(vii)(B). Information in those TMDLs remains available.

III. TMDL Overview

WVDEP developed a total of 490 TMDLs, including 357 for total iron, 130 for fecal coliform, two for net acidity (pH), and one for dissolved aluminum. These TMDLs address the impairments of 364 stream segments in the Little Kanawha River watershed. The total iron TMDLs address total iron impairments in 357 stream segments and biological impairments caused by sedimentation in 59 stream segments. The fecal coliform TMDLs address fecal coliform impairments in 130 stream segments, dissolved oxygen impairments in five stream segments, and biological impairments caused by organic enrichment in 58 stream segments. The pH TMDLs address pH impairments in two stream segments and a dissolved oxygen impairment in one stream segment. The dissolved aluminum TMDL addresses a dissolved aluminum impairment in one stream segment.

WVDEP expressed the allowable loads for each impaired stream segment in three formats: average daily loads, average annual loads, and maximum daily loads. Section 10.0 of the TMDL Report presents the average daily loads segregated between the WLA, LA, and a MOS in pounds per day for total iron and dissolved aluminum, net acidity (pH) as pounds of calcium carbonate per day, and number of colonies in counts per day for fecal coliform. WVDEP also developed Microsoft Excel TMDL allocation spreadsheets, which present both average daily and average annual loads for each impaired stream segment segregated between the WLA, LA, and a MOS in addition to detailed source-specific allocations as average annual loads. Lastly, Appendix M of the Technical Report presents maximum daily loads for each impaired stream segment segregated between the WLA, LA, and a MOS, which were calculated using model output under the TMDL scenarios representing the largest daily predicted instream pollutant loads at the pour points of the most downstream subwatersheds of each stream segment.

Section 4.0 of the TMDL report explains how some of the TMDLs for total iron and/or fecal coliform address the causes of biological impairment in 61 stream segments. Apart from these 61 stream segments, there are four biologically impaired streams for which the stressor identification process did not indicate that TMDLs designed to achieve the numeric water quality criterion for fecal coliform or total iron would resolve the biological impacts. These four stream segments are included in Appendix K. Ionic toxicity was identified as a stressor for these four biologically impaired streams and because WVDEP has not submitted TMDLs for these waters to address ionic toxicity, WVDEP will retain these waters on the Section 303(d) list for future TMDL development. Pursuant to CWA Section 303(d)(2), EPA acts upon TMDLs that are submitted. Nothing in CWA Section 303(d)(2) or the implementing regulations requires that a State submit simultaneously TMDLs for every water quality limited segment within a watershed. WVDEP has leveraged its resources and submitted TMDLs for many water quality limited segments within the watershed. EPA's action is limited to those TMDLs that have been submitted. If additional water quality limited segments in the watershed remain without TMDLs, EPA anticipates that WVDEP will submit TMDLs for those water quality limited segments consistent with its priority ranking and watershed cycling strategy.

WVDEP utilized a stressor identification process to determine the primary causes of impairment in stream segments listed as biologically impaired within the Little Kanawha River watershed based on the narrative water quality criterion of 47 CSR §2–3.2.i. Stressor identification entails reviewing available information, forming and analyzing possible stressor scenarios and implicating causative stressors associated with benthic macroinvertebrate community impact. The primary data set used for stressor identification was generated through pre-TMDL monitoring. Stressor identification was followed by stream-specific determinations of the pollutants for which TMDLs must be developed to address the biological impairment. If that analysis demonstrated that impacts on the benthic macroinvertebrate community were caused by exceedances of numeric water quality criteria for the aquatic life use and could be resolved through attainment of numeric water quality criteria, then TMDLs were developed for those numeric water quality criteria to address the biological impairment. Table 4-1 of the TMDL Report lists the 61 stream segments where the stressor identification process demonstrated that biological impairment caused by sedimentation or organic enrichment stressors will be resolved through the attainment of total iron or fecal coliform numeric water quality criteria, and therefore the associated TMDLs approved herein, respectively.

For biological impairments caused by sedimentation stressors, statistical analyses using pre-TMDL monitoring data collected throughout the subject watersheds were performed to establish the correlation between total iron loads and sediment loads. For the sediment impairments identified in the Little Kanawha River watershed, it was determined that the sediment reductions necessary to ensure the attainment of total iron water quality criteria exceed those that would be needed to resolve the biological stress, as calculated using a sediment "reference watershed" approach. As such, total iron TMDLs serve as acceptable surrogates where sedimentation was identified as a stressor in the Little Kanawha River watershed.

For biological impairments caused by organic enrichment stressors, detailed evaluation of field notes from monitoring and pollutant source tracking efforts indicate that the predominant sources of fecal coliform are inadequately treated sewage. Where organic enrichment was identified as a stressor, certain macroinvertebrates known to thrive in organic sediments, such as those from untreated sewage, were identified within these streams. Based on the presence of certain pollutant sources of fecal coliform and the observed aquatic life, WVDEP has determined that implementation of fecal coliform TMDLs requiring elimination of sources that discharge untreated sewage would reduce the organic and nutrient loading causing the biological impacts. Section 8.0 of the Technical Report describes best management practices that can reduce fecal coliform, nitrogen, phosphorus, and solids loadings to surface waters and resolve the impairments in the identified stream segments. Therefore, fecal coliform TMDLs serve as acceptable surrogates where organic enrichment was identified as a stressor.

Dissolved oxygen impairments were identified in six stream segments due to violations of West Virginia's numeric water quality criteria for dissolved oxygen. For each of these stream segments, detailed source assessments summarized in Section 8.0 of the TMDL Report led WVDEP to determine that implementation of the fecal coliform TMDLs for five of those stream segments and the pH TMDL for the remaining stream segment will resolve the dissolved oxygen impairment in those stream segments. For the five stream segments with fecal coliform TMDLs, sources of organic matter including livestock pasture, failing septic systems, and residential areas lead to elevated fecal coliform and low dissolved oxygen. WVDEP has determined that implementation of the fecal coliform TMDLs through the installation of best management practices (further discussed in Section 8.0 in the Technical Report) will likewise resolve the dissolved oxygen impairment in those stream segments. For the remaining stream segment with a pH TMDL, low dissolved oxygen is most likely caused by chemical oxygen demand originating from a known abandoned mine lands (AML) discharge, which will be resolved by implementing the pH TMDL through the installation of a treatment system that will address low pH and reduce the chemical oxygen demand from the AML seep.

Computational Procedures

The Mining Data Analysis System (MDAS) was used to represent linkage between pollutant sources and instream responses in the Little Kanawha River watershed for total iron, fecal coliform, pH, and dissolved aluminum. MDAS was developed to facilitate large scale, data intensive watershed modeling applications. The model is used to simulate watershed hydrology and pollutant transport based predominantly on land use and precipitation as well as stream hydraulics and instream water quality. MDAS is capable of simulating different flow regimes and pollutant variations. A key advantage of the MDAS development framework is that it has no inherent limitations in terms of modeling size or upper limit model operations. In addition, the MDAS model allows for seamless integration with WV data management systems. Section 9.0 of the TMDL Report discusses the modeling process.

Configuration of the MDAS model involved subdividing the TMDL watershed into subwatershed modeling units connected by stream reaches. The TMDL watershed was broken into 654 separate subwatershed units, based on the groupings of impaired streams shown in Figure 3-2 of the TMDL Report. The TMDL watershed was divided to allow for the evaluation of water quality and flow at pre-TMDL monitoring stations. The subdivision process also ensures a proper stream network configuration within the basin. The physical characteristics of the subwatersheds, weather data, land use information, continuous discharges, and stream data were used as input for the MDAS model. Flow and water quality were continuously simulated into the model on an hourly time-step.

The calibrated model provides the basis for performing the allocation analysis. The first step is to simulate baseline conditions, which represent existing nonpoint source loadings and point source loadings at permit limits. Baseline conditions allow for an evaluation of instream water quality under the highest expected loading conditions. The MDAS model was run for baseline conditions using hourly precipitation data for a representative six-year simulation period (January 1, 2015 through December 31, 2020). The precipitation experienced over this period was applied to the land uses and pollutant sources as they existed at the time of TMDL development. Predicted instream concentrations were compared directly with the TMDL endpoints. This comparison allowed for the evaluation of the magnitude and frequency of exceedances under a range of hydrologic and environmental conditions.

The MDAS model provided allocations for total iron, fecal coliform, pH, and dissolved aluminum in the 364 impaired stream segments of the Little Kanawha River watershed. The TMDLs are presented in Section 10.0 of the TMDL Report, TMDL allocation spreadsheets, and Appendix M of the Technical Report.

IV. Discussion of Regulatory Requirements

EPA has determined that the TMDL is consistent with statutory and regulatory requirements and EPA's policy and guidance. EPA's rational for approving the TMDL is set forth according to the regulatory requirements listed below.

1) TMDLs are designed to meet the applicable water quality standards.

EPA regulations at 40 CFR 130.7(c)(1) state that TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical water quality standards for those pollutants for which TMDLs have been established. Water quality standards are state regulations that define the water quality goals of a waterbody. Water quality standards are comprised of three components: (1) designated uses, (2) criteria (numeric or narrative) necessary to protect those uses, and (3) antidegradation provisions that prevent the degradation of water quality.

The applicable numeric water quality criteria are discussed in Section 2.2 and displayed in Table 2-1 of the TMDL Report, and Table 9-1 of the TMDL Report shows the TMDL endpoints used to attain water quality standards. Designated uses in the Little Kanawha River watershed include: propagation and maintenance of aquatic life in warmwater fisheries and trout waters, water contact recreation, and public water supply. In various streams in the Little Kanawha River watershed, warmwater fishery aquatic life use impairments have been determined based on exceedances of dissolved oxygen, dissolved aluminum, total iron, and/or pH numeric water quality criteria. Trout water aquatic life use impairments have been determined pursuant to exceedances of total iron, dissolved aluminum, dissolved oxygen and/or pH numeric water quality criteria. The TMDL endpoints also must be designed to achieve West

Virginia's narrative water quality criteria as applied to the aquatic life designated use in the Conditions Not Allowed in State Waters provisions of West Virginia's Water Quality Standards Regulations. Water contact recreation and/or public water supply use impairments have also been determined in various waters based on exceedances of numeric water quality criteria for fecal coliform, pH, dissolved aluminum, and total iron.

Certain TMDLs submitted by WVDEP for total iron and fecal coliform address 61 stream segments within the Little Kanawha River watershed identified as not meeting West Virginia's narrative water quality criteria as applied to the aquatic life designated use in the Conditions Not Allowed in State Waters provisions of West Virginia's Water Quality Standards Regulations. See Section III above for a discussion of the process that WVDEP followed to develop these TMDLs.

2) TMDLs include wasteload allocations and load allocations.

EPA regulations at 40 CFR §130.2(i) define total maximum daily load (TMDL) as the sum of the wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. The development of the WLAs and LAs prescribed for stream segments in the Little Kanawha River watershed is further discussed below.

Wasteload Allocations

According to federal regulations at 40 CFR §130.2(h), a WLA is the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. As described in Sections 9.7.1 and 9.7.3 of the TMDL Report, WLAs were developed and assigned[3] to all point sources permitted to discharge total iron and fecal coliform under a National Pollutant Discharge Elimination System (NPDES) permit within the Little Kanawha River watershed. As described in Section 9.7.2 of the TMDL Report, no WLAs were prescribed for dissolved aluminum or net acidity (pH) because no point sources were identified within the subwatersheds that contribute to the two pH or one dissolved aluminum impairments.

Outlined in detail in the allocation spreadsheets and described in Sections 5.0 and 9.7.1 of the TMDL report, total iron WLAs were assigned to three mining permits, three water treatment plants, 111 Multi Sector Stormwater general permit outlets for industrial discharges, seven individual permit outlets, one Solid Waste Landfill outlet, 16 West Virginia Department of Highways stormwater discharges, and two MS4 communities, the City of Parkersburg and the West Virginia Department of Highways. In addition, subwatershed-based future growth allocations have been provided for site registrations under the Construction Stormwater General Permit and the Oil and Gas Construction Stormwater General Permit. These allocations provide subwatershed-specific disturbed areas that may be registered under the General Permits at any point in time, and the allocation spreadsheet includes cumulative area allowances of disturbed area for the immediate subwatershed and all upstream contributing subwatersheds. Projects in excess of the acreage provided for the immediate subwatershed may also be registered under the

[3] The fact that the TMDL does not assign WLAs to any other sources in the watershed should not be construed as a determination by either EPA or WVDEP that there are no additional sources in the watershed that are subject to the NPDES program.

General Permits, provided they meet one of the specific provisions further described in Section 11.1 of the TMDL Report.

Outlined in detail in the allocation spreadsheets and described in Sections 7.0 and 9.7.3 of the TMDL report, fecal coliform WLAs were assigned to 12 publicly owned treatment works (POTW), one privately owned wastewater treatment facility, four Department of Highways Headquarters permits for the discharge of treated wastewater, 25 facilities registered under the general permit for small, privately owned sewage treatment plants ("package plants"), 434 facilities registered under the general permit for home aeration units, and two municipal separate storm sewer (MS4) communities, the City of Parkersburg and the West Virginia Department of Highways. In addition, 11 combined sewer overflow outfalls within the City of Parkersburg were identified after public notice of the draft TMDL and after TMDL modeling was complete. These discharges were assigned operable WLAs matching the operable WLAs of the other non-stormwater facilities (200 counts/100 mL) as an assumption and requirement of the TMDL.

Tables 10-1 and 10-4 of the TMDL Report and Appendix M of the Technical Report provide the total iron and fecal coliform WLAs for each impaired stream segment in the Little Kanawha River watershed. The specific WLAs assigned to each permittee are provided within the allocation spreadsheets and are expressed as annual loads. Based on the foregoing, EPA finds that the annual and daily WLAs included in these TMDLs satisfy the regulations at 40 CFR Part 130.

WVDEP is authorized to administer the National Pollutant Discharge Elimination System (NPDES) Program, which, among other duties, includes issuing NPDES permits to existing or futures point sources subject to the NPDES program. The effluent limitations in any new or revised NPDES permits must be consistent with "the assumptions and requirements of any available [WLA]" in an approved TMDL pursuant to 40 CFR §122.44 (d)(1)(vii)(B). EPA has authority to object to the issuance of an NPDES permit that is inconsistent with the assumptions and requirements of WLAs established for that point source. It is expected that WVDEP will require periodic monitoring of the point source(s), through the NPDES permit process, to determine compliance with the TMDL's WLAs.

Load Allocations

According to federal regulations at 40 CFR §130.2(g), an LA is the portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. LAs are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. As described in Sections 9.7.1 through 9.7.3 of the TMDL Report, LAs were developed and assigned[4] to the dominant nonpoint

[4] EPA's approval of these TMDLs does not mean that EPA has determined there are no point sources within the land use categories that are assigned load allocations in the TMDL. EPA's review and approval of these TMDLs does not represent a determination whether some of the sources discussed in the TMDL report, under appropriate conditions, might be subject to the NPDES program.

source categories within the Little Kanawha River watershed for total iron, aluminum, net acidity (pH), and fecal coliform.

Outlined in detail in the allocation spreadsheets and described in Sections 5.0 and 9.7.1 of the TMDL report, total iron LAs were provided for the dominant nonpoint sources of iron in the watershed, including: abandoned mine lands, sediment-related sources including barren lands, harvested forest and its skid roads and landings, oil and gas well operations, agricultural land uses, urban, residential land uses, roads, and streambank erosion in non-MS4 areas, and background loadings associated with undisturbed forests and grasslands and other nonpoint sources. Streambank erosion has been determined to be a significant sediment source across the watershed.

Outlined in detail in the allocation spreadsheets and described in Sections 7.0 and 9.7.3 of the TMDL report, fecal coliform LAs were provided for the dominant nonpoint sources of fecal coliform in the watershed, including: pasture, cropland, on-site sewage systems including loading from illicit discharges of human waste (i.e., failing septic systems and straight pipes), residential loadings associated with urban/residential runoff from non-MS4 areas, and background loadings associated with wildlife and other nonpoint sources. Discharges of sewage from the approximately 12,646 homes in the watershed that are not served by a centralized collection and treatment system and are within 100 meters of a stream are a significant nonpoint source of fecal coliform in the Little Kanawha River watershed.

Outlined in detail in the allocation spreadsheets and described in Sections 6.0 and 9.7.2 of the TMDL report, net acidity (pH) LAs were provided for the dominant nonpoint sources of acidity in the watershed, including: abandoned mine lands and background sources of acidity from acid deposition on various land uses throughout the watershed.

Outlined in detail in the allocation spreadsheets and described in Sections 5.0 and 9.7.2 of the TMDL report, dissolved aluminum LAs were provided for the dominant nonpoint sources of dissolved aluminum in the watershed, including: barren lands, harvested forest and its skid roads and landings, oil and gas well operations, agricultural land uses, urban, residential land uses, roads, and background loadings associated with undisturbed forest, wetlands, and grasslands and other nonpoint sources.

Tables 10-1 through 10-4 of the TMDL Report and Appendix M of the Technical Report provide the total iron, net acidity (pH), aluminum, and fecal coliform daily LAs for each impaired stream segment in the Little Kanawha River watershed. The specific LAs assigned to each nonpoint source category are provided within the allocation spreadsheets and are expressed as annual loads. Based on the foregoing, EPA finds that the annual and daily LAs included in these TMDLs satisfy the regulations at 40 CFR Part 130.

3) TMDLs consider natural background sources.

According to Federal regulations at 40 CFR §130.2(g & i), natural background sources of pollutants are part of the LA and, wherever possible, natural and nonpoint source loads should be distinguished. The Little Kanawha River watershed TMDLs consider the impact of pollutant contributions by evaluating loadings from natural background sources like undisturbed forest, grasslands, wetlands, and wildlife. Sections 9.7.1, 9.7.2, and 9.7.3 of the TMDL Report describe the background sources considered for total iron, pH, dissolved aluminum, and fecal coliform and confirm that the loadings associated with these background sources are included in the LA.

For fecal coliform specifically, Section 7.2.4 of the TMDL Report states that on the basis of the low fecal accumulation rates for forested areas, storm water sampling results, and model simulations, wildlife is not considered to be a significant nonpoint source of fecal coliform in the watershed.

Based on the foregoing, EPA finds the TMDLs accounts for natural background sources consistent with the regulations at 40 CFR §130.2(g & i).

4) TMDLs consider critical conditions.

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to account for critical conditions for stream flow, loading, and water quality parameters. Section 9.7.5 of the TMDL Report explains that a critical condition represents a scenario where water quality criteria are most susceptible to violation. Analysis of total iron, fecal coliform, pH, and dissolved aluminum water quality data for the impaired streams addressed in the Little Kanawha River watershed shows high pollutant concentrations during both high- and low-flow thereby precluding selection of a single critical condition. Both high-flow and low-flow periods were taken into account during TMDL development by using a long period of weather data that represented wet, dry, and average flow periods included in a representative six-year simulation period (January 1, 2015 through December 31, 2020). Figure 9-3 of the TMDL Report presents the range of precipitation conditions and the years that were used for TMDL development. Based on the foregoing, EPA finds that the TMDL accounts for critical conditions consistent with the regulations at 40 CFR §130.7(c)(1).

5) TMDLs consider seasonal variations.

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to consider seasonal variation. Section 9.7.4 of the TMDL Report explains that seasonal variation was considered in the formulation of the modeling analysis for each pollutant (total iron, fecal coliform, pH, and dissolved aluminum). Continuous simulation (modeling over a period of several years that captured precipitation extremes) inherently considers seasonal hydrologic and source loading variability. The pollutant concentrations simulated on a daily time step by the model were compared with TMDL endpoints. Allocations that met these endpoints throughout the modeling period were developed. Based on the foregoing, EPA finds the TMDL has been established at levels necessary to attain and maintain the applicable water quality standards with seasonal variations consistent with the regulations at 40 CFR §130.7(c)(1).

6) TMDLs include a margin of safety.

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to include a margin of safety (MOS). The MOS accounts for uncertainty about the relationship between pollutant loads and receiving water quality. It can be provided implicitly through analytical assumptions or explicitly by reserving a portion of loading capacity. Section 9.6.1 of the TMDL Report discusses the MOS used in these TMDLs. In the Little Kanawha River watershed TMDLs for total iron, fecal coliform, pH and dissolved aluminum, an explicit five percent MOS was included to account for uncertainty in the modeling process. In addition, an implicit MOS was also incorporated by prescribing WLAs for continuous discharges and instream treatment structures based on water quality criteria at their point of discharge. Based on the foregoing, EPA finds that WVDEP has incorporated a MOS into the TMDL consistent with the regulations at 40 CFR §130.7(c)(1).

7) TMDLs have been subject to public participation.

EPA regulations at 40 CFR §130.7(c)(1)(ii) require TMDLs to be subject to public review, and the State implements a process for involving the public in development of TMDLs. This requirement is addressed in Section 12.0 of the TMDL Report. The availability of draft TMDLs was advertised via email, social media, and news release. The notice was shared directly with interested stakeholders. Interested parties were invited to submit comments during the public comment period, which began on June 14, 2023 and ended on July 17, 2023. The electronic documents were also posted on the WVDEP's internet site at www.dep.wv.gov/tmdl. An ESRI StoryMap has been created to provide an overview of the TMDL at https://storymaps.arcgis.com/stories/a775763704e24caca52800458a1b5b9b.

In addition to comments WVDEP received from EPA, which were addressed in WVDEP's transmittal letter of the final TMDLs to EPA, WVDEP received a set of comments from the West Virginia Rivers Coalition. In Section 12.3 of the TMDL Report, WVDEP provides responses to those comments. Based on the foregoing, EPA finds that the TMDL has been subject to WVDEP's public participation process.

The commentor expressed disagreement with WVDEP's use of the family level, West Virginia Stream Condition Index (WVSCI) instead of the Genus Level Index of Most Probably Stream Status (GLIMPSS) to identify biological impairments.[5] The commenter also pointed out the absence of TMDLs to resolve impairment of aquatic life due to stress from ionic toxicity within WVDEP's Little Kanawha River watershed TMDL package. Essentially, the commenter asserts that the TMDLs in the report may not address every water quality limit segment within the Little Kanawha River watershed, either because WVDEP's use of WVSCI did not identify certain impairments or because WVDEP has not submitted TMDLs to address ionic toxicity.

Pursuant to CWA Section 303(d)(2), EPA acts upon TMDLs that are submitted. Nothing in CWA Section 303(d)(2) or the implementing regulations requires that a State submit

[5] On June 1, 2023, EPA partially approved and partially disapproved West Virginia's 2018-2020-2022 Section 303(d) list because EPA determined that WVDEP did not use all existing and readily available genus-level biological data and information to develop its Section 303(d) list and did not provide a technical, science-based rationale for excluding that data from its assessment decisions. On July 19, 2023, EPA published for public notice and comment its identification of 346 additional water quality limited segments for inclusion on West Virginia's 2018-2020-2022 Section 303(d) list, which were identified based on EPA's evaluation of existing and readily available genus-level biological monitoring data using GLIMPSS.

simultaneously TMDLs for every water quality limited segment within a watershed.[6] WVDEP has leveraged its resources and submitted TMDLs for many water quality limited segments within the watershed. EPA's action is limited to those TMDLs that have been submitted. If additional water quality limited segments in the watershed remain without TMDLs, EPA anticipates that WVDEP will submit TMDLs for those water quality limited segments consistent with its priority ranking and watershed cycling strategy.

V. Discussion of Reasonable Assurance

The CWA section 303(d) requires that a TMDL be "established at a level necessary to implement the applicable water quality standard." Documenting adequate reasonable assurance increases the probability that regulatory and voluntary mechanisms will be applied such that the pollution reduction levels specified in the TMDL are achieved and, therefore, applicable water quality standards are attained.

Where a TMDL is developed for waters impaired by both point and nonpoint sources, in EPA's best professional judgment, determinations of reasonable assurance that the TMDL's LAs will be achieved could include whether practices capable of reducing the specified pollutant load: (1) exist; (2) are technically feasible at a level required to meet allocations; and (3) are likely to be implemented. Where there is a demonstration that nonpoint source load reductions can and will be achieved, a TMDL writer can determine that reasonable assurance exists and, on the basis of that reasonable assurance, allocate greater loadings to point sources.

Reasonable assurance is addressed in Section 13.0 of the TMDL Report. Based on the foregoing, EPA finds acceptable the reasonable assurances set forth in the TMDL Report. While EPA recommends development of TMDL implementation plans as a best practice and while TMDLs should include reasonable assurance, neither CWA Section 303(d)(1)(C) nor 40 C.F.R. § 130.2(i) require that TMDLs include plans to implement the TMDL.

[6] EPA understands there may be other reasons why a segment was on the final WVDEP submitted 2018-2020-2022 303(d) list and not addressed by this TMDL. These include, but are not limited to, evaluation of data after the December 30, 2020 2018-2020-2022 303(d) list data cutoff indicates the stream segment is attaining the designated use and WVDEP will consider proposing to delist the stream segment in the 2024 303(d) list; WVDEP's recent overhaul of their assessment unit identification (AUID) schema to set relatively static termini and assign new AUIDs may not fully overlap with prior AUIDs; the TMDL does not address impairments for other pollutants identified on the Section 303(d) list for waters within the Little Kanawha River watershed such as methylmercury in fish tissue or phosphorus.

APPENDIX 1: WATERBODIES AND IMPAIRMENTS ADDRESSED IN THE LITTLE KANAWHA RIVER WATERSHED TMDLS

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Little Kanawha River	WV-OLK_01	Little Kanawha River	WVLK		X (L)	M (UL)	X (L)	X, Redo (L)	
Little Kanawha River	WV-OLK_02	Little Kanawha River	WVLK		X (L)	M (UL)			
Little Kanawha River	WV-OLK_03	Little Kanawha River	WVLK			M (UL)			
Little Kanawha River	WV-OLK_04	Little Kanawha River	WVLK		X (L)	M (UL)			
Little Kanawha River	WV-OLK_06	Little Kanawha River	WVLK		X (L)	M (UL)			
Little Kanawha River	WV-OLK_07	Little Kanawha River	WVLK		X (L)	Redo (L)			
Little Kanawha River	WV-OLK_08	Little Kanawha River	WVLK		X (L)	Redo (UL)			
Little Kanawha River	WV-OLK_09	Little Kanawha River	WVLK		X (L)	Redo (L)			
Little Kanawha River	WV-OLK_10	Little Kanawha River	WVLK		X (L)	Redo (L)			
Little Kanawha River	WV-OLK_11	Little Kanawha River	WVLK		X (L)	X, Redo (L)			
Little Kanawha River	WV-OLK_12	Little Kanawha River	WVLK		X (L)	X, Redo (L)			
Little Kanawha River	WV-OLK_13	Little Kanawha River	WVLK		X (L)	Redo (UL)			
Little Kanawha River	WV-OLK-1_01	Neal Run	WVLK-1		X (L)	X (L)			
Little Kanawha River	WV-OLK-100_01	Bull River	WVLK-57			M (UL)			
Steer Creek	WV-OLK-109_07	Steer Creek	WVLKS		X (L)	X (L)			
Steer Creek	WV-OLK-109-A_01	Sycamore Creek	WVLKS-1			M (UL)			
Steer Creek	WV-OLK-109-A_02	Sycamore Creek	WVLKS-1			M (UL)			
Steer Creek	WV-OLK-109-A-4_01	Left Fork/Sycamore Creek	WVLKS-1-D			M (UL)			
Steer Creek	WV-OLK-109-P_01	Bear Fork	WVLKS-8			M (UL)			
Steer Creek	WV-OLK-109-P_03	Bear Fork	WVLKS-8			M (UL)			
Steer Creek	WV-OLK-109-P-1_01	Little Bear Fork	WVLKS-8-A			M (UL)			
Steer Creek	WV-OLK-109-Q_02	Right Fork/Steer Creek	WVLKS-9		X (L)	M (UL)			
Steer Creek	WV-OLK-109-Q_03	Right Fork/Steer Creek	WVLKS-9		X (L)				

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Steer Creek	WV-OLK-109-Q_04	Right Fork/Steer Creek	WVLKS-9			M (UL)			X (L) - Sed + OrgEN
Steer Creek	WV-OLK-109-Q_05	Right Fork/Steer Creek	WVLKS-9		X (L)	M (UL)			X (L) - Sed
Steer Creek	WV-OLK-109-Q_06	Right Fork/Steer Creek	WVLKS-9	X (L)		M (UL)			
Steer Creek	WV-OLK-109-Q-11_01	Tanner Fork	WVLKS-9-D			M (UL)			X (L) - Sed + OrgEN
Steer Creek	WV-OLK-109-Q-17_01	O'Brien Fork	WVLKS-9-G			M (UL)			
Steer Creek	WV-OLK-109-Q-17_03	O'Brien Fork	WVLKS-9-G		X (L)	M (UL)			
Steer Creek	WV-OLK-109-Q-17-G_01	Triplett Fork	WVLKS-9-G-2			M (UL)			
Steer Creek	WV-OLK-109-Q-17-M_01	Plantation Fork	WVLKS-9-G-3			M (UL)			
Steer Creek	WV-OLK-109-Q-20_01	Mill Fork	WVLKS-9-H			M (UL)			
Steer Creek	WV-OLK-109-Q-24_01	Lower Sleith Fork	WVLKS-9-I			M (UL)			
Steer Creek	WV-OLK-109-Q-24-F_01	Cowskin Fork	WVLKS-9-I-3			M (UL)			
Steer Creek	WV-OLK-109-Q-33_01	Dry Fork	WVLKS-9-N			M (UL)			
Steer Creek	WV-OLK-109-Q-37_01	Joes Fork	WVLKS-9-P			M (UL)			
Steer Creek	WV-OLK-109-Q-7_01	Crooked Fork	WVLKS-9-B			M (UL)			
Steer Creek	WV-OLK-109-Q-7_02	Crooked Fork	WVLKS-9-B			M (UL)			
Steer Creek	WV-OLK-109-R_01	Left Fork/Steer Creek	WVLKS-10			M (UL)			
Steer Creek	WV-OLK-109-R_02	Left Fork/Steer Creek	WVLKS-10		X (L)	X (L)			
Steer Creek	WV-OLK-109-R_03	Left Fork/Steer Creek	WVLKS-10		X (L)	X (L)			X (L) - OrgEn
Steer Creek	WV-OLK-109-R_04	Left Fork/Steer Creek	WVLKS-10		X (L)	X (L)			X (L) - Sed + OrgEn
Steer Creek	WV-OLK-109-R-21_01	Bender Run	WVLKS-10-P		X (L)	M (UL)			X (L) - Sed + OrgEn
Steer Creek	WV-OLK-109-R-3_01	Owen Run	WVLKS-10-B			M (UL)			
Steer Creek	WV-OLK-109-R-36_01	Grasslick Run	WVLKS-10-U			M (UL)			
Steer Creek	WV-OLK-109-R-6_01	White Oak Run	WVLKS-10-D		X (L)	M (UL)			X (L) - Sed + OrgEn
Steer Creek	WV-OLK-109-R-7_01	Steer Run	WVLKS-10-E		X (L)	X (L)			X (L) - Sed + OrgEn
Steer Creek	WV-OLK-109-R-7-E_01	Lick Fork	WVLKS-10-E-3			M (UL)			
Little Kanawha River	WV-OLK-11_01	Jackson Run	WVLK-5			M (UL)			
Little Kanawha River	WV-OLK-117_02	Laurel Creek	WVLK-61			M (UL)			
Little Kanawha River	WV-OLK-132_01	Middle Run	WVLK-65			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Tanner Creek	WV-OLK-134_01	Tanner Creek	WVLK-66		X (L)	M (UL)			X (L) - Sed + OrgEn
Tanner Creek	WV-OLK-134_02	Tanner Creek	WVLK-66		X (L)	M (UL)			X (L) - Sed + OrgEn
Tanner Creek	WV-OLK-134_03	Tanner Creek	WVLK-66		X (L)	M (UL)			X (L) - Sed + OrgEn
Tanner Creek	WV-OLK-134_04	Tanner Creek	WVLK-66		X (L)	M (UL)			X (L) - Sed + OrgEn
Tanner Creek	WV-OLK-134-G_01	Trace Fork	WVLK-66-A			M (UL)			
Tanner Creek	WV-OLK-134-G-7_01	UNT/Trace Fork RM 2.38				M (UL)			
Tanner Creek	WV-OLK-134-I_01	Laurel Fork	WVLK-66-C			M (UL)			
Tanner Creek	WV-OLK-134-Q_01	Bull Fork	WVLK-66-E			M (UL)			
Tanner Creek	WV-OLK-134-V_01	Ellis Fork	WVLK-66-G			M (UL)			
Little Kanawha River	WV-OLK-137_01	Job Run	WVLK-68			M (UL)			
Little Kanawha River	WV-OLK-138_01	Grass Run	WVLK-69			M (UL)			
Little Kanawha River	WV-OLK-138_02	Grass Run	WVLK-69			M (UL)			
Little Kanawha River	WV-OLK-138-E_01	Road Run	WVLK-69-C			M (UL)			
Tygart Creek	WV-OLK-14_01	Tygart Creek	WVLK-6			M (UL)			
Tygart Creek	WV-OLK-14_03	Tygart Creek	WVLK-6	X (L)	X (L)	M (UL)			
Tygart Creek	WV-OLK-14_04	Tygart Creek	WVLK-6	X (L)	X (L)	X (L)			
Cedar Creek	WV-OLK-142_01	Cedar Creek	WVLK-72		X (L)	M (UL)			
Cedar Creek	WV-OLK-142_03	Cedar Creek	WVLK-72			M (UL)			X (L) - Sed + OrgEN
Cedar Creek	WV-OLK-142_04	Cedar Creek	WVLK-72			M (UL)			
Cedar Creek	WV-OLK-142_05	Cedar Creek	WVLK-72		X (L)	M (UL)			X (L) - Sed + OrgEn
Cedar Creek	WV-OLK-142-AC_01	Bull Run	WVLK-72-L			M (UL)			
Cedar Creek	WV-OLK-142-AD_01	Butchers Run	WVLK-72-M			M (UL)			X (L) - Sed + OrgEN
Cedar Creek	WV-OLK-142-AJ_01	Trace Run	WVLK-72-P			M (UL)			
Cedar Creek	WV-OLK-142-AQ_01	Slabcamp Run	WVLK-72-R		X (L)	M (UL)			
Cedar Creek	WV-OLK-142-AR_01	Right Fork/Cedar Creek	WVLK-72-S			M (UL)			
Cedar Creek	WV-OLK-142-AS_01	Perkins Fork	WVLK-72-T			M (UL)			
Cedar Creek	WV-OLK-142-AS-1_01	Shaver Fork	WVLK-72-T-1			M (UL)			
Cedar Creek	WV-OLK-142-AS-6_01	Moss Run	WVLK-72-T-3			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Cedar Creek	WV-OLK-142-AT_01	Marsh Run	WVLK-72-T.5	X (L)		X (L)	X (L)		
Cedar Creek	WV-OLK-142-AX_01	Westfall Fork	WVLK-72-V			M (UL)			
Cedar Creek	WV-OLK-142-C_01	Paddy Run	WVLK-72-A			M (UL)			
Cedar Creek	WV-OLK-142-G_01	Grandcamp Run	WVLK-72-B			M (UL)			
Cedar Creek	WV-OLK-142-L_01	Spruce Run	WVLK-72-D			M (UL)			
Cedar Creek	WV-OLK-142-P-2_01	Long Lick Run	WVLK-72-E-2		X (L)	M (UL)			
Cedar Creek	WV-OLK-142-R_01	Little Bull Run	WVLK-72-G			M (UL)			
Cedar Creek	WV-OLK-142-Y_01	Lower Level Run	WVLK-72-I			M (UL)			
Sinking Creek	WV-OLK-146_01	Sinking Creek	WVLK-74		X (L)	M (UL)			X (L) - Sed
Leading Creek	WV-OLK-149_01	Leading Creek	WVLK-75		X (L)	M (UL)			X (L) - Sed + OrgEn
Leading Creek	WV-OLK-149_03	Leading Creek	WVLK-75		X (L)	X (L)			X (L) - Sed + OrgEn
Leading Creek	WV-OLK-149_05	Leading Creek	WVLK-75			M (UL)			
Leading Creek	WV-OLK-149_06	Leading Creek	WVLK-75		X (L)	X (L)			X (L) - Sed + OrgEn
Leading Creek	WV-OLK-149_07	Leading Creek	WVLK-75		X (L)	X (L)			
Leading Creek	WV-OLK-149-A_01	Big Run	WVLK-75-A			M (UL)			
Leading Creek	WV-OLK-149-AC_01	Fink Creek	WVLK-75-N			M (UL)			
Leading Creek	WV-OLK-149-AC_02	Fink Creek	WVLK-75-N		X (L)	M (UL)			
Leading Creek	WV-OLK-149-AC_03	Fink Creek	WVLK-75-N			M (UL)			
Leading Creek	WV-OLK-149-AC_04	Fink Creek	WVLK-75-N		X (L)	M (UL)			
Leading Creek	WV-OLK-149-AC-19_01	Sand Fork	WVLK-75-N-5		X (L)	M (UL)			
Leading Creek	WV-OLK-149-AC-19-D_01	Buck Run	WVLK-75-N-5-A			M (UL)			
Leading Creek	WV-OLK-149-AC-21_01	Buck Run	WVLK-75-N-5.5			M (UL)			
Leading Creek	WV-OLK-149-AC-24_01	Dry Fork	WVLK-75-N-6			M (UL)			
Leading Creek	WV-OLK-149-AC-28_01	Wolf Run	WVLK-75-N-6.5			M (UL)			
Leading Creek	WV-OLK-149-AC-36_01	Isaacs Fork	WVLK-75-N-7		X (L)	M (UL)			
Leading Creek	WV-OLK-149-AC-7_01	Walnut Fork	WVLK-75-N-1			M (UL)			
Leading Creek	WV-OLK-149-AE_01	Happy Hollow	WVLK-75-N.5		X (L)				
Leading Creek	WV-OLK-149-AG_01	UNT/Leading Creek RM 19.48				M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Leading Creek	WV-OLK-149-AI_01	Sleeths Run	WVLK-75-O.5			M (UL)			
Leading Creek	WV-OLK-149-AM_01	Crooked Run	WVLK-75-P			M (UL)			
Leading Creek	WV-OLK-149-AQ_01	Alum Fork	WVLK-75-Q		X (L)	M (UL)			X (L) - Sed + OrgEn
Leading Creek	WV-OLK-149-AQ-4_01	Back Fork	WVLK-75-Q-2			M (UL)			
Leading Creek	WV-OLK-149-J_01	Horn Creek	WVLK-75-F			M (UL)			
Leading Creek	WV-OLK-149-J_02	Horn Creek	WVLK-75-F		X (L)	X (L)			X (UL) - Sed + OrgEn
Leading Creek	WV-OLK-149-J_03	Horn Creek	WVLK-75-F		X (L)	X (L)			
Leading Creek	WV-OLK-149-J-10_01	Coxcamp Fork	WVLK-75-F-5			M (UL)			
Leading Creek	WV-OLK-149-J-5_01	Upper Big Run	WVLK-75-F-3			M (UL)			
Leading Creek	WV-OLK-149-P_01	Ellis Run	WVLK-75-I			M (UL)			
Leading Creek	WV-OLK-149-W_01	Cove Creek	WVLK-75-K			M (UL)			X (UL) - OrgEN
Leading Creek	WV-OLK-149-W_02	Cove Creek	WVLK-75-K		X (L)	X (L)			
Leading Creek	WV-OLK-149-W_03	Cove Creek	WVLK-75-K		X (L)	X (L)			X (UL) - Sed + OrgEn
Leading Creek	WV-OLK-149-W-10_01	Rush Run	WVLK-75-K-7		X (L)	X (L)			X (L) - Sed + OrgEn
Leading Creek	WV-OLK-149-W-13_01	Fallen Timber Run	WVLK-75-K-8			M (UL)			
Leading Creek	WV-OLK-149-W-4_01	Little Cove Creek	WVLK-75-K-2			M (UL)			
Leading Creek	WV-OLK-149-W-9_01	Bear Fork	WVLK-75-K-6			M (UL)			
Tygart Creek	WV-OLK-14-AE_01	UNT/Tygart Creek RM 12.99	WVLK-6-I.2		X (L)				
Tygart Creek	WV-OLK-14-AJ_01	Rockcamp Run	WVLK-6-J			M (UL)			
Tygart Creek	WV-OLK-14-G_01	Badgley Fork	WVLK-6-A			M (UL)			
Tygart Creek	WV-OLK-14-H_01	Sams Creek	WVLK-6-B			M (UL)			
Tygart Creek	WV-OLK-14-I_01	Little Tygart Creek	WVLK-6-C			M (UL)			
Tygart Creek	WV-OLK-14-I_02	Little Tygart Creek	WVLK-6-C			M (UL)			
Tygart Creek	WV-OLK-14-I-5_01	Lockhart Run	WVLK-6-C-1			M (UL)			
Tygart Creek	WV-OLK-14-L_01	Sugarcamp Run	WVLK-6-D			M (UL)			
Tygart Creek	WV-OLK-14-P_01	Sycamore Run	WVLK-6-E			M (UL)			
Tygart Creek	WV-OLK-14-W_01	Buck Run	WVLK-6-G			M (UL)			
Little Kanawha River	WV-OLK-155_01	Sycamore Run	WVLK-77			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Stewart Creek	WV-OLK-159_01	Stewart Creek	WVLK-79	X (L)	X (L)	X (L)			
Stewart Creek	WV-OLK-159-C_01	Collins Run	WVLK-79-B			M (UL)			
Duck Creek	WV-OLK-163_01	Duck Creek	WVLK-82		X (L)	Redo (UL)			X (L) - Sed + OrgEn
Duck Creek	WV-OLK-163-A_01	UNT/Duck Creek RM 1.34				M (UL)			
Bear Run	WV-OLK-164_01	Bear Run	WVLK-83		X (L)	M (UL)			
Lynch Run	WV-OLK-166_01	Lynch Run	WVLK-85		Redo (UL)	X, Redo (L)			
Lynch Run	WV-OLK-166-C_01	UNT/Lynch Run RM 0.91	WVLK-85-C			X, Redo (L)			
Sand Fork	WV-OLK-168_01	Sand Fork	WVLK-86			Redo (L)			X (L) - Sed + OrgEn
Sand Fork	WV-OLK-168_03	Sand Fork	WVLK-86		X (L)	X, Redo (L)			X (L) - Sed + OrgEn
Sand Fork	WV-OLK-168_04	Sand Fork	WVLK-86		X (L)	X, Redo (L)			
Sand Fork	WV-OLK-168_05	Sand Fork	WVLK-86		X (L)	Redo (UL)			X (L) - Sed + OrgEn
Sand Fork	WV-OLK-168-C_01	Joes Run	WVLK-86-B			M (UL)			
Sand Fork	WV-OLK-168-E_01	Ellis Creek	WVLK-86-C			M (UL)			
Sand Fork	WV-OLK-168-E-4_01	Jakes Run	WVLK-86-C-3		X (L)	M (UL)			
Sand Fork	WV-OLK-168-H_01	Indian Fork	WVLK-86-E			M (UL)			
Sand Fork	WV-OLK-168-H_02	Indian Fork	WVLK-86-E		X (L)	M (UL)			
Sand Fork	WV-OLK-168-H_03	Indian Fork	WVLK-86-E		X (L)	M (UL)			X (L) - Sed + OrgEn
Sand Fork	WV-OLK-168-H-12_01	Bens Run	WVLK-86-E-5			M (UL)			
Sand Fork	WV-OLK-168-H-14_01	Sleepcamp Run	WVLK-86-E-7			M (UL)			
Sand Fork	WV-OLK-168-H-16_01	Goosepen Run	WVLK-86-E-8		X (L)	M (UL)			
Sand Fork	WV-OLK-168-H-3_01	Heaters Fork	WVLK-86-E-1			M (UL)			
Sand Fork	WV-OLK-168-H-3-B_01	Rocky Fork	WVLK-86-E-1-B			M (UL)			
Sand Fork	WV-OLK-168-J_01	Butchers Fork	WVLK-86-G			M (UL)			
Sand Fork	WV-OLK-168-L_01	Old Field Fork	WVLK-86-I			M (UL)			
Sand Fork	WV-OLK-168-N_01	Cove Lick	WVLK-86-J			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Sand Fork	WV-OLK-168-N-4_01	Laurel Run	WVLK-86-J-3			M (UL)			
Sand Fork	WV-OLK-168-R_01	Rock Run	WVLK-86-K		X (L)	M (UL)			
Sand Fork	WV-OLK-168-Z_01	Crooked Fork	WVLK-86-M		X (L)	M (UL)			
Duskcamp Run	WV-OLK-171_01	Duskcamp Run	WVLK-88		X, Redo (L)	Redo (L)			
Duskcamp Run	WV-OLK-171-A_01	Right Fork/Duskcamp Run	WVLK-88-A		X (L)	Redo (L)			
Duskcamp Run	WV-OLK-171-C_01	UNT/Duskcamp Run RM 1.98				M (UL)			
Copen Run	WV-OLK-173_01	Copen Run	WVLK-90		X, Redo (L)	X (L)			
Copen Run	WV-OLK-173_02	Copen Run	WVLK-90		X, Redo (L)	M (UL)			
Copen Run	WV-OLK-173-A_01	Bower Run	WVLK-90-A		X (L)				
Copen Run	WV-OLK-173-B_01	Bull Fork	WVLK-90-D			M (UL)			
Copen Run	WV-OLK-173-D_01	Wolfpen Run	WVLK-90-E			M (UL)			
Little Kanawha River	WV-OLK-175_01	Hyers Run	WVLK-92			M (UL)			
Oil Creek	WV-OLK-177_01	Oil Creek	WVLK-94			M (UL)			
Oil Creek	WV-OLK-177_02	Oil Creek	WVLK-94		X (L)	M (UL)			
Oil Creek	WV-OLK-177_03	Oil Creek	WVLK-94		X (L)	X (L)			X (L) - Sed + OrgEn
Oil Creek	WV-OLK-177-E-6_01	Meadow Run	WVLK-94-E-1			M (UL)			
Oil Creek	WV-OLK-177-F_01	Threelick Run	WVLK-94-F		X (L)	M (UL)			
Oil Creek	WV-OLK-177-K_01	Redlick Run	WVLK-94-I			M (UL)			
Saltlick Creek	WV-OLK-178_01	Saltlick Creek	WVLK-95			Redo (L)			
Saltlick Creek	WV-OLK-178_02	Saltlick Creek	WVLK-95			X (L)			
Saltlick Creek	WV-OLK-178_03	Saltlick Creek	WVLK-95		X (L)	Redo (UL)			X (UL) - Sed + OrgEn
Saltlick Creek	WV-OLK-178_04	Saltlick Creek	WVLK-95		X (L)	Redo (UL)			
Saltlick Creek	WV-OLK-178-E_01	Right Fork/Saltlick Creek	WVLK-95-B			M (UL)			
Saltlick Creek	WV-OLK-178-H_01	Burns Run	WVLK-95-D			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Saltlick Creek	WV-OLK-178-L_01	O'Brien Fork	WVLK-95-G		X (L)	M (UL)			
Saltlick Creek	WV-OLK-178-L-3_01	Right Fork/O'Brien Fork	WVLK-95-G-1			M (UL)			
Saltlick Creek	WV-OLK-178-L-4_01	Berry Fork	WVLK-95-G-2			M (UL)			
Saltlick Creek	WV-OLK-178-P_01	Pickles Fork	WVLK-95-I			M (UL)			
Saltlick Creek	WV-OLK-178-S_01	Spruce Fork	WVLK-95-J			M (UL)			
Saltlick Creek	WV-OLK-178-W_01	Hughes Fork	WVLK-95-K			M (UL)			
Little Kanawha River	WV-OLK-183_01	Williams Run	WVLK-96.5			M (UL)			
Stillwell Creek	WV-OLK-19_01	Stillwell Creek	WVLK-7			M (UL)			
Stillwell Creek	WV-OLK-19_02	Stillwell Creek	WVLK-7		X (L)	M (UL)			X (L) - Sed + OrgEn
Stillwell Creek	WV-OLK-19_03	Stillwell Creek	WVLK-7		X (L)	M (UL)			X (L) - Sed + OrgEn
Knawl Creek	WV-OLK-190_01	Knawl Creek	WVLK-101		X (L)				
Knawl Creek	WV-OLK-190-B_01	Little Knawl Creek	WVLK-101-B			M (UL)			
Knawl Creek	WV-OLK-190-F_01	Left Fork/Knawl Creek	WVLK-101-E			M (UL)			
Little Kanawha River	WV-OLK-191_01	Big Run	WVLK-102			M (UL)			
Falls Run	WV-OLK-194_01	Falls Run	WVLK-105			M (UL)			
Falls Run	WV-OLK-194_02	Falls Run	WVLK-105		X (L)	M (UL)			
Stillwell Creek	WV-OLK-19-A_01	Little Stillwell Creek	WVLK-7-A			M (UL)			
Stillwell Creek	WV-OLK-19-C_01	Left Fork/Stillwell Creek	WVLK-7-B			M (UL)			
Stillwell Creek	WV-OLK-19-P_01	North Fork/Stillwell Creek	WVLK-7-F			M (UL)			
Little Kanawha River	WV-OLK-1-A_01	UNT/Neal Run RM 2.58				M (UL)			
Worthington Creek	WV-OLK-2_01	Worthington Creek	WVLK-2			M (UL)			
Worthington Creek	WV-OLK-2_02	Worthington Creek	WVLK-2		X (L)	X (L)			
Worthington Creek	WV-OLK-2_03	Worthington Creek	WVLK-2		X (L)	X (L)			X (L) - Sed + OrgEn
Little Kanawha River	WV-OLK-213_01	Pretty Run	WVLK-114			M (UL)			
Right Fork/Little Kanawha River	WV-OLK-216_01	Right Fork/Little Kanawha River	WVLK-115			M (UL)			
Right Fork/Little Kanawha River	WV-OLK-216_02	Right Fork/Little Kanawha River	WVLK-115		X (L)	M (UL)			
Right Fork/Little Kanawha River	WV-OLK-216_03	Right Fork/Little Kanawha River	WVLK-115			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Right Fork/Little Kanawha River	WV-OLK-216_04	Right Fork/Little Kanawha River	WVLK-115			M (UL)			
Right Fork/Little Kanawha River	WV-OLK-216-K_01	Jerry Run	WVLK-115-D			M (UL)			
Right Fork/Little Kanawha River	WV-OLK-216-N_01	Buffalo Run	WVLK-115-F			M (UL)			
Right Fork/Little Kanawha River	WV-OLK-216-Q_01	Left Fork/Right Fork/Little Kanawha River	WVLK-115-H		X (L)	M (UL)			
Right Fork/Little Kanawha River	WV-OLK-216-V_01	Howell Fork	WVLK-115-K			M (UL)			
Walker Creek	WV-OLK-22_01	Walker Creek	WVLK-10		X (L)	M (UL)			X (L) - Sed + OrgEn
Walker Creek	WV-OLK-22_02	Walker Creek	WVLK-10			M (UL)			
Walker Creek	WV-OLK-22_03	Walker Creek	WVLK-10		X (L)	M (UL)			
Walker Creek	WV-OLK-22_04	Walker Creek	WVLK-10			M (UL)			X (UL) - Sed + OrgEN
Little Kanawha River	WV-OLK-221-A_01	Laurel Run	WVLK-118-A			M (UL)			
Little Kanawha River	WV-OLK-223_01	Trace Run	WVLK-120			M (UL)			
Little Kanawha River	WV-OLK-224_01	Cherry Fork	WVLK-121			M (UL)			
Walker Creek	WV-OLK-22-A_01	Kites Run	WVLK-10-A			M (UL)			
Walker Creek	WV-OLK-22-D_01	Tug Fork	WVLK-10-B			M (UL)			
Little Kanawha River	WV-OLK-230_01	Lynn Camp Run	WVLK-124			M (UL)			
Laurel Run	WV-OLK-234_01	Laurel Run	WVLK-125		X (L)	M (UL)			
Laurel Run	WV-OLK-234-D_01	UNT/Laurel Run RM 3.04	WVLK-125-A			M (UL)			
Little Kanawha River	WV-OLK-236_01	Cow Run	WVLK-126			M (UL)			
Little Kanawha River	WV-OLK-237_01	Flatwoods Run	WVLK-127			M (UL)			
Little Kanawha River	WV-OLK-243_01	UNT/Little Kanawha River RM 165.34	WVLK-130.5			M (UL)			
Little Kanawha River	WV-OLK-245_01	Getout Run	WVLK-131			M (UL)			
Slate Creek	WV-OLK-25_01	Slate Creek	WVLK-11		X (L)	M (UL)			
Slate Creek	WV-OLK-25_03	Slate Creek	WVLK-11		X (L)	M (UL)			
Slate Creek	WV-OLK-25-B_01	Road Run	WVLK-11-B			M (UL)			
Slate Creek	WV-OLK-25-F_01	Mudlick Run	WVLK-11-E			M (UL)			
Slate Creek	WV-OLK-25-H_01	Wolf Run	WVLK-11-G			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Slate Creek	WV-OLK-25-M_01	Left Fork/Slate Creek				M (UL)			
Slate Creek	WV-OLK-25-N_01	Right Fork/Slate Creek				M (UL)			
Worthington Creek	WV-OLK-2-A_01	Berry Run	WVLK-2-A		X (L)	X (L)			
Worthington Creek	WV-OLK-2-B_01	Holmes Run	WVLK-2-B			M (UL)			
Worthington Creek	WV-OLK-2-C_01	Johnson Run	WVLK-2-B.5			M (UL)			
Worthington Creek	WV-OLK-2-G_01	Gillespie Run	WVLK-2-D		X (L)	M (UL)			X (UL) - Sed + OrgEn
Worthington Creek	WV-OLK-2-K_01	Laurel Fork	WVLK-2-F			M (UL)			
Little Kanawha River	WV-OLK-34_01	Lee Creek	WVLK-17			M (UL)			
Little Kanawha River	WV-OLK-37_01	Grieves Run	WVLK-19			M (UL)			
Standingstone Creek	WV-OLK-39_01	Standingstone Creek	WVLK-21		X (L)	M (UL)			X (L) - Sed + OrgEn
Standingstone Creek	WV-OLK-39_03	Standingstone Creek	WVLK-21		X (L)	M (UL)			
Standingstone Creek	WV-OLK-39-B_01	Parish Fork	WVLK-21-A			M (UL)			
Standingstone Creek	WV-OLK-39-D_01	Oil Rock Run	WVLK-21-B			M (UL)			
Standingstone Creek	WV-OLK-39-G_01	Deaver Fork	WVLK-21-D			M (UL)			
Standingstone Creek	WV-OLK-39-K_01	Brushy Fork	WVLK-21-G			M (UL)			
Tucker Creek	WV-OLK-43_01	Tucker Creek	WVLK-23			M (UL)			
Tucker Creek	WV-OLK-43_02	Tucker Creek	WVLK-23		X (L)	M (UL)			
Tucker Creek	WV-OLK-43_03	Tucker Creek	WVLK-23		X (L)	M (UL)			
Tucker Creek	WV-OLK-43-C_01	Horse Run	WVLK-23-A			M (UL)			
Tucker Creek	WV-OLK-43-H_01	Ballard Run	WVLK-23-D			M (UL)			
Little Kanawha River	WV-OLK-44_01	Two Ripple Run	WVLK-24			M (UL)			
Reedy Creek	WV-OLK-45_05	Reedy Creek	WVLK-25		X (L)	X, Redo (L)			
Reedy Creek	WV-OLK-45_06	Reedy Creek	WVLK-25		X (L)	X, Redo (L)			X (L) - Sed + OrgEn
Reedy Creek	WV-OLK-45-C_03	Right Reedy Creek	WVLK-25-B		X (L)	X (L)			X (L) - Sed + OrgEn
Reedy Creek	WV-OLK-45-C-1_01	Lynncamp Run	WVLK-25-B-1			M (UL)			
Reedy Creek	WV-OLK-45-C-10_01	Somerville Fork	WVLK-25-B-7			M (UL)			
Reedy Creek	WV-OLK-45-C-11_01	Cranesnest Run	WVLK-25-B-8			M (UL)			
Reedy Creek	WV-OLK-45-C-13_01	Enoch Fork	WVLK-25-B-10		X (L)	X (L)			X (L) - Sed + OrgEn

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Reedy Creek	WV-OLK-45-C-14_01	Fulls Fork	WVLK-25-B-9		X (L)	X (L)			
Reedy Creek	WV-OLK-45-C-7_01	Thorns Run	WVLK-25-B-4			M (UL)			
Reedy Creek	WV-OLK-45-C-9_01	Big Run	WVLK-25-B-6			M (UL)			
Reedy Creek	WV-OLK-45-K_01	Two Run	WVLK-25-G			M (UL)			
Reedy Creek	WV-OLK-45-Q_01	Conrad Run	WVLK-25-L			M (UL)			
Reedy Creek	WV-OLK-45-U_01	Cain Run	WVLK-25-O			M (UL)			
Reedy Creek	WV-OLK-45-X_01	Left Fork/Reedy Creek	WVLK-25-S			M (UL)			
Reedy Creek	WV-OLK-45-X_02	Left Fork/Reedy Creek	WVLK-25-S			M (UL)			
Reedy Creek	WV-OLK-45-X_03	Left Fork/Reedy Creek	WVLK-25-S		X (L)	X (L)			X (L) - Sed + OrgEn
Reedy Creek	WV-OLK-45-X_04	Left Fork/Reedy Creek	WVLK-25-S		X (L)	X (L)			X (L) - Sed + OrgEn
Reedy Creek	WV-OLK-45-X_05	Left Fork/Reedy Creek	WVLK-25-S			M (UL)			
Reedy Creek	WV-OLK-45-X-1_01	Middle Fork/Reedy Creek	WVLK-25-R			M (UL)			
Reedy Creek	WV-OLK-45-X-1_02	Middle Fork/Reedy Creek	WVLK-25-R		X (L)	X (L)			X (L) - Sed + OrgEn
Reedy Creek	WV-OLK-45-X-10_01	Bear Run	WVLK-25-S-6			M (UL)			
Reedy Creek	WV-OLK-45-X-15_01	Colt Run	WVLK-25-S-8			M (UL)			
Reedy Creek	WV-OLK-45-X-18_01	Tucker Run	WVLK-25-S-11		X (L)	M (UL)			X (L) - Sed
Reedy Creek	WV-OLK-45-X-1-C_01	Johnson Run	WVLK-25-R-2		X (L)	M (UL)			X (L) - Sed + OrgEn
Reedy Creek	WV-OLK-45-X-24_01	Stover Fork	WVLK-25-S-13			M (UL)			
Reedy Creek	WV-OLK-45-X-9_01	Rush Run	WVLK-25-S-5			M (UL)			
Reedy Creek	WV-OLK-45-Y_01	Right Fork/Reedy Creek	WVLK-25-Q			M (UL)			
Reedy Creek	WV-OLK-45-Y_02	Right Fork/Reedy Creek	WVLK-25-Q		X (L)	X (L)			X (L) - Sed + OrgEn
Reedy Creek	WV-OLK-45-Y-2_01	Seaman Fork	WVLK-25-Q-1		X (L)				X (L) - Sed + OrgEN
Little Kanawha River	WV-OLK-49_01	Chestnut Run	WVLK-28			M (UL)			
Little Kanawha River	WV-OLK-52_01	Burning Springs Run	WVLK-29.5			M (UL)			
Spring Creek	WV-OLK-55_04	Spring Creek	WVLK-31		X (L)	Redo (UL)			X (L) - Sed + OrgEn
Spring Creek	WV-OLK-55_05	Spring Creek	WVLK-31		X (L)	X, Redo (L)			
Spring Creek	WV-OLK-55-A_01	Bear Run	WVLK-31-A			M (UL)			
Spring Creek	WV-OLK-55-AC_01	Nancy Run	WVLK-31-W			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Spring Creek	WV-OLK-55-AF_01	Tanner Run	WVLK-31-X		X (L)	M (UL)			X (L) - Sed + OrgEn
Spring Creek	WV-OLK-55-AF-2_01	Scaffold Run	WVLK-31-X-2			M (UL)			
Spring Creek	WV-OLK-55-AG_01	Goff Run	WVLK-31-Y			M (UL)			
Spring Creek	WV-OLK-55-AI_01	Left Fork/Spring Creek	WVLK-31-Z			M (UL)			
Spring Creek	WV-OLK-55-AI_02	Left Fork/Spring Creek	WVLK-31-Z			M (UL)			
Spring Creek	WV-OLK-55-AI_03	Left Fork/Spring Creek	WVLK-31-Z		X (L)	M (UL)			
Spring Creek	WV-OLK-55-AI-2_01	Charles Fork	WVLK-31-Z-1		X (L)				
Spring Creek	WV-OLK-55-AI-5_01	Vandale Fork	WVLK-31-Z-3			M (UL)			
Spring Creek	WV-OLK-55-AJ_01	Right Fork/Spring Creek	WVLK-31-AA			M (UL)			
Spring Creek	WV-OLK-55-AJ_02	Right Fork/Spring Creek	WVLK-31-AA	X (L)	X (L)	X (L)			
Spring Creek	WV-OLK-55-AJ-2_01	Lick Fork	WVLK-31-AA-1			M (UL)			
Spring Creek	WV-OLK-55-AJ-7_01	Missouri Fork	WVLK-31-AA-3			M (UL)			
Spring Creek	WV-OLK-55-N_01	Bear Run	WVLK-31-M			M (UL)			
Spring Creek	WV-OLK-55-R_01	Little Spring Creek	WVLK-31-O			M (UL)			
Spring Creek	WV-OLK-55-R-2_01	Left Fork/Little Spring Creek	WVLK-31-O-2			M (UL)			
Spring Creek	WV-OLK-55-R-8_01	Right Fork/Little Spring Creek	WVLK-31-O-6			M (UL)			
Spring Creek	WV-OLK-55-U_01	Island Run	WVLK-31-R			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59_01	West Fork/Little Kanawha River	WVLKW			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59_02	West Fork/Little Kanawha River	WVLKW		X (L)	M (UL)			X (L) - Sed + OrgEn
West Fork/Little Kanawha River	WV-OLK-59_04	West Fork/Little Kanawha River	WVLKW		X (L)	M (UL)			
West Fork/Little Kanawha River	WV-OLK-59_05	West Fork/Little Kanawha River	WVLKW		X (L)	M (UL)			X (L) - Sed + OrgEn
West Fork/Little Kanawha River	WV-OLK-59_06	West Fork/Little Kanawha River	WVLKW		X (L)	M (UL)			X (L) - Sed + OrgEn
West Fork/Little Kanawha River	WV-OLK-59_07	West Fork/Little Kanawha River	WVLKW			M (UL)			X (L) - Sed + OrgEN
West Fork/Little Kanawha River	WV-OLK-59-AF_01	Jesse Run	WVLKW-17			M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
West Fork/Little Kanawha River	WV-OLK-59-AL-1_01	Right Fork/Daniels Run	WVLKW-21-A			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-AS_01	Mushroom Run	WVLKW-23.5			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-AX_01	Millstone Creek	WVLKW-27			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-BB_01	Crummis Creek	WVLKW-28			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-BB-2_01	Right Fork/Crummis Creek	WVLKW-28-A			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-BH_01	Left Fork/West Fork/Little Kanawha River	WVLKW-31		X (L)	M (UL)			X (L) - Sed + OrgEn
West Fork/Little Kanawha River	WV-OLK-59-BH_03	Left Fork/West Fork/Little Kanawha River	WVLKW-31		X (L)	M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-BT_01	Walnut Fork	WVLKW-39			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-O_01	Rowles Run	WVLKW-10			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-S_01	Triplett Run	WVLKW-14			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-S-2_01	Right Fork/Triplett Run	WVLKW-14-A			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W_02	Henry Fork	WVLKW-15		X (L)	M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W_03	Henry Fork	WVLKW-15			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W_04	Henry Fork	WVLKW-15			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W_05	Henry Fork	WVLKW-15		X (L)	M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-11_01	Island Run	WVLKW-15-H			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-12_01	Beech Fork	WVLKW-15-I			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-12_02	Beech Fork	WVLKW-15-I			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-12_03	Beech Fork	WVLKW-15-I		X (L)	M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
West Fork/Little Kanawha River	WV-OLK-59-W-12-F_01	Road Run	WVLKW-15-I-3			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-12-T_01	Sang Run	WVLKW-15-I-9		X (L)	M (UL)			X (L) - Sed + OrgEn
West Fork/Little Kanawha River	WV-OLK-59-W-15_01	Clover Run	WVLKW-15-L			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-15-H_01	Chambers Fork	WVLKW-15-L-3		X (L)	M (UL)			X (L) - Sed + OrgEn
West Fork/Little Kanawha River	WV-OLK-59-W-17_01	Rush Run	WVLKW-15-M			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-26_01	Canoe Run	WVLKW-15-R			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-29_01	Sycamore Fork	WVLKW-15-T			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-W-8_01	Laurel Run	WVLKW-15-F		X (L)	M (UL)			X (L) - Sed + OrgEn
West Fork/Little Kanawha River	WV-OLK-59-W-9_01	Leatherbark Creek	WVLKW-15-G			M (UL)			
West Fork/Little Kanawha River	WV-OLK-59-Z_01	Barnes Run	WVLKW-16			M (UL)			
Little Kanawha River	WV-OLK-66_01	Rock Run	WVLK-37			M (UL)			
Straight Creek	WV-OLK-69_01	Straight Creek	WVLK-39			M (UL)			
Straight Creek	WV-OLK-69_02	Straight Creek	WVLK-39		X (L)	M (UL)			X (L) - Sed + OrgEn
Straight Creek	WV-OLK-69-J_01	Left Fork/Straight Creek	WVLK-39-A			M (UL)			
Mill Run	WV-OLK-7_01	Mill Run	WVLK-4		X (L)	X (L)			
Leading Creek	WV-OLK-72_01	Leading Creek	WVLK-40		X (L)	M (UL)			
Leading Creek	WV-OLK-72_02	Leading Creek	WVLK-40		X (L)	M (UL)			
Leading Creek	WV-OLK-72-E_01	Bell Run	WVLK-40-B			M (UL)			
Leading Creek	WV-OLK-72-M_01	Cole Run	WVLK-40-F			M (UL)			
Annamoriah Run	WV-OLK-76_01	Annamoriah Run	WVLK-42		X (L)	M (UL)			X (L) - Sed + OrgEn
Yellow Creek	WV-OLK-79_01	Yellow Creek	WVLK-45			M (UL)			
Yellow Creek	WV-OLK-79_02	Yellow Creek	WVLK-45		X (L)	M (UL)			
Yellow Creek	WV-OLK-79-S_01	Back Fork	WVLK-45-L			M (UL)			
Yellow Creek	WV-OLK-79-S-3_01	UNT/Back Fork RM 0.71	WVLK-45-L-3		X (L)	M (UL)			

TMDL Watershed	AUID NHD Code	Stream Name	WV Code	DO	FC	Fe	pH	Al	Bio
Little Kanawha River	WV-OLK-81_01	Big Root Run	WVLK-46			M (UL)			
Little Kanawha River	WV-OLK-85_01	Bee Run	WVLK-49			M (UL)			
Little Kanawha River	WV-OLK-92_01	Pine Creek	WVLK-53			M (UL)			
Little Kanawha River	WV-OLK-92-L_01	Right Fork/Pine Creek	WVLK-53-B			M (UL)			
Little Kanawha River	WV-OLK-95_01	Leafbank Run	WVLK-54						X (UL) - Sed + OrgEn

Notes:
RM = river mile
UNT = unnamed tributary
Al = aluminum impairment
DO = dissolved oxygen impairment
FC = fecal coliform impairment
Fe = iron impairment
pH = acidity impairment
M = impairment determined via modeling
X = impairment determined via water quality sampling
Redo = re-do of previous TMDL
L = listed as impaired on WV’s 2018-2020-2022 Integrated Report in 4A or 5
UL = not listed as impaired on WV’s 2018-2020-2022 Integrated Report
Bio = biological impairment
Sed = sediment determined to be a biological stressor
OrgEn = organic enrichment determined to be a biological stressor